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JAMES HECTOR, C.M.G., M.D., F.R.S.,  
DIRECTOR.

# CATALOGUES

OF THE

NEW ZEALAND

DIPTERA, ORTHOPTERA, HYMENOPTERA;

WITH DESCRIPTIONS OF THE SPECIES.



BY

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## PREFACE.

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QUESTIONS of the greatest importance to the practical agriculturist are dependent for their solution upon an accurate knowledge of the Insect Fauna of a country. As a first step it is necessary to provide observers with the means of determining the affinities of the insects that are known to occur, so that their habits, and the injurious effects which, in the different stages of development, they frequently produce on vegetation, may be accurately ascertained and recorded. It thus becomes possible to apply the experience gained in other countries for the mitigation of the evils concerning which there is already an abundant literature.\*

The following work is an amplification of a part of the provisional lists of insects indigenous to New Zealand published by Professor Hutton in 1873 (*Trans. N. Z. Inst.*, VI., p. 158).

Although our knowledge of the subject is still very incomplete, it may be interesting to note the progress which has been made in the determination of species since the above date. The former lists recorded only 742 species in the eight orders of Coleoptera, Diptera, Orthoptera, Hymenoptera, Neuroptera, Heteroptera, Homoptera, and Lepidoptera. The first of these orders has, through the assiduous labours of Captain Broun, been more thoroughly investigated than the others, and the number of species of

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\* See especially the "Guide to the Study of Insects injurious and beneficial to Crops," by Dr. A. S. Packard: Holt and Co., New York, 1876.

beetles recognized in New Zealand has been increased from 265 to 1,321 ("New Zealand Coleoptera," by Captain Broun). The three following orders, which are treated of in the present work, have increased in number of species from 151 to 227. The remaining orders still require systematic cataloguing for the New Zealand student, although the scattered literature bearing on them has received extensive additions.

The total number of insects described for New Zealand now reaches 2,000; but this number will be largely increased, especially in the order Lepidoptera. The compilation of this work adds another to the already extensive series of gratuitous services which Professor Hutton has rendered to the colony.

JAMES HECTOR,

*Director.*

*Colonial Museum, Wellington,  
20th May, 1881.*

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## INTRODUCTION.

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THESE catalogues are chiefly compilations, and should not have been thought worthy of publication if it were not for the great difficulty there is, in the colony, in obtaining descriptions of many of our animals which have been published in expensive books, or in still more expensive periodicals. I have to thank Mr. A. G. Butler, of the British Museum, for sending me copies of descriptions of two genera and three species which were not to be obtained in the colony; and to Mr. Max Menderschhausen, for translating the descriptions of the New Zealand Diptera in the *Reise der Novara*.

My principal difficulty with respect to the Diptera has been in trying to assimilate the nomenclature of the various authors, especially with regard to the veins and cells of the wing. As there is still some ambiguity about these points, I cannot do better than give Dr. Schiner's description of his system,\* which seems to me the most simple, and which I have adopted in this catalogue; and also add a table showing the relations of this system with those of Macquart and Loew:—

“In a few cases three, but in most cases only two, longitudinal veins spring from the base of the wing, and these by their division give rise to the other longitudinal veins. The third of these veins, when present, is very small. The others are called the *upper* and *lower primary veins*. They are always united by a *transverse vein*, which is usually perpendicular to the long axis of the wing, but is sometimes oblique and curved, and then not easily distinguishable. The outer margin of the wing is occupied by the *costal vein*: the upper primary vein may be called the *subcostal*. From the subcostal vein springs the second, and from this the third longitudinal, or the *radial* and *cubital veins*. When only a single inferior branch is emitted by the subcostal vein, it is to be regarded as the cubital. Between the subcostal and the costal there is another longitudinal vein, the *mediastinal*, which however is frequently amalgamated with the subcostal. The further divisions of the radial and cubital veins, when such exist, do not require special names.

“The lower primary vein is the *postical*; it emits a branch above and below: the upper branch is the *discoidal*, the lower the *anal*

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\* Translated by W. S. Dallas, Esq., F.L.S., M.E.S., Zoological Record, 1864, p. 533.

*vein*. These are the fourth, fifth, and sixth longitudinal veins. The discoidal usually divides much. The postical vein is frequently branched; a superior branch often unites it with the discoidal cell, enclosing the *posterior basal cell*. This superior branch is the *posterior transverse vein*. The anal vein runs simply to the margin of the wing, sometimes unites again with the postical, enclosing an *anal cell*. The third primary vein, when present, is the *axillary vein*.

"The cells are named from the veins enclosing them. The *mediastinal cell* is between the mediastinal and costal veins; the next cell parallel to it, enclosed by the subcostal, is the *costal cell*; the *subcostal* is enclosed between the subcostal and radial veins; and the *cubital cell* between the cubital and radial veins, or, when the latter is absent, the subcostal vein. The cell enclosed between the upper and lower primary veins, and closed by the transverse vein, is the *anterior basal cell*. The *discoidal cell* is situated on the disc of the wing below the transverse vein; it is enclosed by the discoidal and postical veins and their branches, or by the former alone. The *posterior marginal cells* occupy the posterior margin of the wing, and are bounded by the branches of the lower primary vein, but the first and most important of them is enclosed between the discoidal and cubital veins, the transverse vein, and the margin of the wing."

Loew.	Schiner.	Macquart.
Costal vein ...	Costal vein ...	Marginal nervure.
Axillary vein ...	Mediastinal vein ...	Mediastinal nervure.
1st longitudinal ...	Subcostal vein ...	} Submarginal nervure.
2nd longitudinal ...	Radial vein ...	
3rd longitudinal ...	Cubital vein ...	
4th longitudinal ...	Discoidal vein ...	Externo-median.
5th longitudinal ...	Postical vein ...	Interno-median.
6th longitudinal ...	Anal vein ...	Anal nervure.
7th longitudinal ...	Axillary vein ...	Axillary nervure.
Costal cell ...	Mediastinal cell ...	Costal cell.
Subcostal cell ...	Costal cell ...	Mediastinal cell.
Marginal cell ...	Subcostal cell ...	Marginal cell.
Submarginal cell ...	Cubital cell ...	Submarginal cell.
Basal cells ...	Basal cells ...	Basal cells.
Discoidal cell ...	Discoidal cell ...	Discoidal cell.
Posterior cells ...	Posterior marginal ...	Posterior cells.
Anal cell ...	Anal cell ...	Anal cell.
Axillary cell ...	Axillary cell ...	Axillary cell.

The relative position of these veins, and the names which are adopted in this work to distinguish them, will be readily understood from the wood cut.

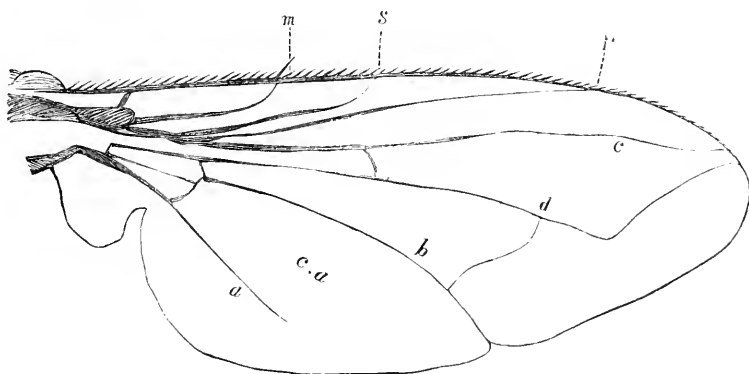


Diagram of the wing of a dipterous insect: *a*, canal vein; *c a*, anal cell; *p*, postcal vein; *d*, discoidal vein; *c*, cubital vein; *r*, radial vein; *s*, subcostal vein; *m*, mediastinal vein.

The dipterous fauna of New Zealand has as yet been so little investigated that it would be useless to give synopses of the families. Only ninety-five species have as yet been described, and of this number I expect that about six, introduced principally on the collections made by the naturalists of the "Novara" expedition, do not really belong to our fauna, but have had incorrect localities attached to them: I must however leave this point to be settled by Auckland naturalists, as all these species are reported from the neighbourhood of Auckland.

Many of our commonest flies have not yet been named, such as the *Phora*, the *Agromyza* (?) and the *Limnophora* found so abundant on our windows, and the *Catopa* which swarms on the decaying seaweed on the shore. The *Chironomidae*, the *Mycetophilidae*, the *Cecidomyiidae*, the *Inflatae*, the *Empidae*, and the *Æstridae* are all represented in New Zealand, while none have yet been described, except one species of *Rhyphus*.

The following names were given by Mr. White to Diptera in the "Voyage of the 'Erebus' and 'Terror,'" but no descriptions have been published of them:—

*Limnobia* *gracilis*.  
 „ *ehoria*.  
 „ *ægrotans*.  
 „ *fumipennis*.  
 „ *repanda*.

*Tipula* *dux*.  
 „ *clara*.  
 „ *obscuripennis*.  
*Simulium* *cœcitiens*.  
*Rhyphus* *phaleratus*.

In obtaining the materials for compiling the catalogue of the Orthoptera, which includes species described prior to 1878, I have been much assisted by Mr. E. W. Janson, of 35, Little Russell Street, London, who copied out for me those descriptions which could not be obtained in the colony. Since writing to him I have found that the following species of Gryllidæ has also been described, but I have not been able to include it in this catalogue: *Gryllodes maorius*. Saussure, Mélanges, Fasc. V., p. 377 (1877).

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## INSECTA DIPTERA.

## ARTIFICIAL KEY TO THE PRINCIPAL GROUPS.

[Descriptions of these groups will be found in the "Monograph of the Diptera of North America," by Loew and Osten Sacken: Part I., published by the Smithsonian Institution; price 1½ dollars.]

## ANALYSIS OF THE SECTIONS.

A. Antennæ six- or more jointed; palpi four- or five-jointed. *Nemocera*.

B. Antennæ three-jointed; palpi one- or two-jointed. *Brachycera*.

## Section—NEMOCERA.

## Analysis of the Families.

A. Thorax without any transverse suture.

a. Tibiæ not spurred.

\* Wings hairy.

Longitudinal veins few. *Cecidomyidæ*.

Longitudinal veins many. *Psychodidæ*.

\*\* Wings naked.

† No ocelli.

1. Legs long; antennæ with more than 12 joints.

Costal vein continued round the margin of the wing. *Culicidæ*.

Costal vein ending near the tip of the wing. *Chironomidæ*.

2. Legs short; antennæ with less than 12 joints. *Simulidæ*.

†† Ocelli three.

No discal cell. *Bibionidæ*.

A discal cell. *Rhyphidæ*.

b. Tibiæ spurred.

Anterior tibiæ unarmed. *Blepharoceridæ*.

All the tibiæ spurred. *Mycetophilidæ*.

B. Thorax with a V-shaped transverse suture. *Tipulidæ*.

## Section—BRACHYCERA.

## Analysis of the Families.

A. Third joint of the antennæ annulated.

a. Antennæ not clavate.

\* Tegulæ small.

1. Tibiæ spurred. *Xylophagidæ*.

2. Tibiæ not spurred.

Longitudinal veins crowded. *Stratiomyidæ*.

Longitudinal veins not crowded. *Acanthomeridæ*.

\*\* Tegulæ large. *Tabanidæ*.

b. Antennæ clavate. *Midasidæ*.

## BRACHYCERA—continued.

## B. Third joint of the antennæ simple.

## a. Basal cells large.

\* Thorax and abdomen inflated. *Cyrtidæ* or *Inflatæ*.

\*\* Thorax and abdomen not inflated.

## 1. Empodium pulvilliform.

Tibiæ spurred. *Leptidæ*.Tibiæ not spurred. *Hermoneuridæ*.2. Empodium styliiform; legs with bristles. *Asilidæ*.

## 3. Empodium none.

† Discoidal vein with two branches. *Therevidæ*.†† Discoidal vein with one branch. *Bombylidæ*.

††† Discoidal vein unbranched.

‡ A spurious vein between cubital and discoidal. *Syrphidæ*.

‡‡ No spurious longitudinal vein.

¶ Cubital forked. *Sceonopinidæ*.

¶¶ Cubital simple.

## a. Discoidal simple.

Antennal bristle thick. *Myopidæ*.Antennal bristle thin. *Platypezidæ*.

## β. Discoidal forked or absent.

Antennal bristle basal. *Pipunculidæ*.Antennal bristle apical. *Lonchopteridæ*.

## 4. Empodium membranaceous and linear.

† First joint of antennæ very short. *Tachydromidæ*.

†† First joint of antennæ moderate.

Posterior transverse vein oblique to the posterior border of the wing.

*Hybotidæ*.

Posterior transverse vein parallel to the posterior border of the wing.

*Empidæ*.

## b. Basal cells short.

\* Discoidal and basal cells united. *Dolichopodidæ*.

\*\* Discoidal and basal cells separate.

1. Antennæ in rounded pits. *Estridæ*.

## 2. Antennæ not in rounded pits.

† First posterior cell closed or nearly closed. *Muscidæ*.

†† First posterior cell widely open.

Tegulæ developed. *Anthomyzidæ*.Tegulæ rudimentary or none. *Acalyptridæ*.

## Family—MUSCIDÆ.

## Analysis of the Sub-families.

Bristle of antennæ bare or pubescent; legs short. *Tachinidæ*.Bristle of antennæ hairy or pectinated; legs long. *Dexinæ*.Bristle of antennæ plumose or hairy, with the tip bare. *Sarcophaginæ*.Bristle of antennæ entirely plumose or pectinated. *Muscinæ*.

BRACHYCERA—continued.

Family—ACALYPTRIDÆ.

Analysis of the Sub-families.

A. Neuration of the wings complete.

a. All the tibiæ spurred.

\* Costa of wing bristly. *Helomyzinæ*.

\*\* Costa smooth.

Thorax rounded. *Cordylurinae*.

Thorax flat. *Phycodrominae*.

b. No spurs on tibiæ, but a bristle.

No furrows for the antennæ. *Sciomyzinæ*.

c. Middle tibiæ only spurred.

\* Posterior basal cells large.

1. Front with bristles on the crown only.

Tip of mediastinal vein obliterated by a fold in the wing. *Psilinae*.

Subcostal vein bare. *Micropezinae*.

Cubital vein generally hairy. *Ortalinae*.

2. Front bristly.

Veins of wing with bristles. *Trypetinae*.

Palpi rudimentary. *Sepsinae*.

\*\* Posterior basal cells small.

Tibiæ with a small bristle near the end. *Sapromyzinae*.

Tibiæ without any bristle. *Louchæinae*.

d. Middle and posterior tibiæ spurred.

Subcostal vein rather short. *Heteroneurinae*.

B. Neuration incomplete; the mediastinal vein more or less rudimentary.

a. Eyes on lateral projections. *Diopsinae*.

b. Eyes normal.

\* Thorax flat. *Boborinae*.

\*\* Thorax rounded.

1. Wings with several veins running into the costa. *Phorinae*.

2. Wings normal.

† Posterior tibiæ with a short spur. *Opomyzinæ*.

†† Middle tibiæ only spurred.

‡ Mouth without vibrissæ.

Mouth large. *Ephydriinae*.

Front without bristles. *Oscininae*.

‡‡ Mouth with vibrissæ.

¶ Costa with bristles. *Geomyzinæ*.

¶¶ Costa without bristles.

α. Claws and pulvilli very small. *Drosophilinae*.

β. Claws and pulvilli normal.

1. Posterior transverse vein near the border of the wing. *Piophilinae*.

2. Posterior transverse vein distant from the margin of wing. *Agromyzinae*.

3. Posterior transverse vein wanting.

Posterior basal cells small. *Phytomyzinæ*.

Posterior basal cells wanting. *Asteinae*.





# INSECTA DIPTERA.

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## ORDER—DIPTERA.

Two mesothoracic wings with radiate veins ; posterior wings rudimentary ; mouth suctorial, furnished with a proboscis formed by the labrum and labium, and enclosing the bristle-like, or knife-like, maxillæ and mandibles. Metamorphosis complete. Larva apodal.

## SUB-ORDER—OVIPARA.

The female lays eggs, or larvæ just emitted from the eggs.

## SECTION---OBTECTÆ.

Pupa enclosed in a separate case, as in the Lepidoptera.

## Division—NEMOCERA.

Antennæ six- or more jointed ; palpi four- or five-jointed.

## Family—CULICIDÆ.

Proboscis long and thread-like ; mandibles and maxillæ free ; antennæ filiform, plumose in the males, hairy in the females.

## Genus—CULEX.

*Linneus.*

Palpi as long as the proboscis in the males, very short in the females.

**C. ARGYROPIUS.** *Walker, Cat. Dipt. in Brit. Mus., p. 2 (1848).*

*Female.* Body black ; proboscis full half the length of the body ; antennæ shorter than the proboscis ; sides of the thorax with silvery spots. Legs black, very long ; a silvery spot on each thigh, near the tip, which is also silvery, as are those of the shanks and of the joints of the feet. Wings tinged slightly with brown, their fore-borders black ; veins dark brown, thickly fringed with black hairs ; poisers dark brown.

Length,  $2\frac{1}{2}$  lines.

New Zealand (Dr. Sinclair).

**C. IRACUNDUS.** *Walker, l.c., p. 6 (1848).*

*Female.* Body black ; head and thorax clothed with golden hairs ; abdomen with a yellow band at the fore-border of each segment ; these

bands are most narrow in the middle, and they are white on the under-side. Legs purplish-brown; thighs dull pale yellow, with brown tips. Wings colourless, veins pale brown; poisers pale brown, with brown knobs.

Length, 2 lines.

New Zealand (Dr. Sinclair).

C. ACER. *Walker, l.c., p. 8 (1848).*

*Female.* Body dull pale yellow; proboscis dull yellow; thorax with three pale-brown stripes. Legs pale yellow, shaded with darker colour at intervals. Wings colourless, veins dull yellow.

Length, 2 lines.

C. ALBIROSTRIS. *Macquart, Diptères Exotiques, Sup. 4, p. 10 (1850).*

*Female.* Proboscis white, at the base and at the extremity black. Palpi black, a little white at the extremity. Face white; front black, with thin brownish down. Antennæ blackish, the first joints pale. Thorax with a reddish-grey down. Abdomen deep black, the posterior margins of the segments white. Legs pale yellowish, a little blackish at the extremities of the thighs; tibiæ brownish; the posterior pair a little whitish in the middle; tarsi blackish, a white ring at the base of each joint. Wings with the veins normal.

Length, 2 lines.

Akaroa.

#### Family—MYCETOPHILIDÆ.

Proboscis short. Antennæ long. Head without a muzzle, generally with two or three ocelli. Legs long, the *thighs terminated by two spines*. Larvæ living in fungi.

#### Genus—RHYPHUS.

*Latreille.*

Second joint of the palpi thick. Antennæ subulate, sixteen-jointed, the two first distinct from the others, the remainder almost globular, diminishing in size. Abdomen of seven distinct segments. Legs long in the male. Two basal cells in the wings, a discoidal, and five posterior cells.

R. NEOZEALANDICUS. *Schiner, Reise der Novara, Dipt. II., p. 49 (1868).*

Thorax brownish-black, lighter in the female than in the male, with indistinct stripes; the protuberances before the scutellum, and the hinder part of the back, rust-red, which enlarges on the side of the belly, elsewhere reddish-brown; in the female light brown. Head

black, palpi light brown; antennæ light yellow, the four or five last joints black. Legs yellow, femora and tarsi brown. Wings hyaline, with brown spots; the mediastinal and subcostal cells intense brown, with the exception of a lighter spot behind the base of the last; basal cell brown in the middle, in the brown a small light spot; from these the brown colour extends round the posterior portion of the basal cells; the small cross vein is also thick and edged with brown; behind the point of the discoidal cell the brown colour extends upward, but does not quite reach the brown edging of the wing; round the point of the wing less intense brown, in the lower part of which a sharply-bounded space is left entirely colourless; there is also a cloudy or darkish colour on the edge of the wing, especially round the anal and axillary cells; the postical vein is very thick. Poisers yellow.

Length, 3 lines.

### Genus—MYCETOPHILA.

#### *Meigen.*

Antennæ filiform, rather short; the two first joints cyathiform, separated from the others, the others cylindrical. Eyes oval; two ocelli on their internal borders. Abdomen compressed in the female. Tibiæ with two rows of lateral spines. Subcostal cell simple.

#### *M. GUTTATA, sp. nov.*

*Female.* Thorax pale fulvous, with four longitudinal brown streaks; the two inside streaks, starting from the anterior end, taper backward and end some distance in front of the scutellum; the two outside streaks, commencing about one-fourth its length from the anterior border, are continued to the posterior border. Scutellum pale fulvous, with a brown anterior central patch. Abdomen blackish-brown, the two or three anterior segments fulvous in front and below. Head fulvous, with a brown stain on the occiput. Two ocelli, each surrounded with a dark-brown ring. Antennæ and palpi fulvous, the antennæ brownish near the tip. Legs fulvous. Wings tinged pale brown, with brown veins. A brown patch at the base, and another in the centre of the first posterior cell. A brown patch in the third, and another in the fourth posterior cell. Base of the second posterior much more advanced than that of the fourth posterior cell. Poisers pale yellow.

Length, 2 lines.

*Male.* Paler. Abdomen yellow, with the posterior margin of each segment brown. Spots on the wings paler.

Wellington, Waikouati, and Dunedin.

## Genus—PLATYURA.

*Meigen.*

Proboscis a little protruding; fourth joint of the palpi rather longer, and more slender than the others. Antennæ compressed; the two first joints distinct, the others finely haired. Eyes oval. Abdomen slender, narrowed at the base, depressed at the extremity. Subcostal cell sometimes open, sometimes closed by the radial vein.

*P. TRIDENS, sp. nov.*

*Female.* Thorax yellow, with three broad longitudinal dark-brown bands which blend together anteriorly, the central one much shorter, not extending more than half-way down the thorax; anterior margin dark brown. Scutellum yellow in the centre, brown on each side. Thorax and scutellum with a few long black bristles. Abdomen dark brown, the posterior half of each segment yellow. Head brown. Ocelli three, placed in line convex to the front. Proboscis and palpi yellow. Antennæ rather longer than the head and thorax; the first and second joints yellow; the third to the eighth ringed yellow and brown; remainder brown. Legs yellow; the tarsi dark brown. Wings with a slight dusky tinge; veins dark brown; the three branches of the discoidal vein faint, disconnected. A dark patch on the radial vein, another in the centre of the cubital cell; cross vein with a broad dusky margin. Subcostal cell closed.

Length, 3 lines.

Wellington.

This species differs from *Platyura* in the construction of the palpi, which are only three-jointed. The first is thick and with bristles; the second and third are slender, the last pointed. The antennæ are eighteen-jointed, the last joint very small; the first two joints are thick and cyathiform, the remainder compressed; they are tomentose, and nearly as long as the head and thorax. The epistome has a short blunt snout, covered with short hairs. Thorax very convex, one-third the length of the abdomen. Ovipositor very thick at the base. Wings long, with only one basal cell; four incomplete posterior cells.

## Genus—SCIARA.

*Meigen.*

Head spherical. Palpi three-jointed, distinct. Antennæ filiform; the two first joints separated from the others, almost cylindrical. Eyes reniform, approximating on the vertex. Abdomen cylindrical in the male, pointed in the female. Thighs groove internally. Basal and subcostal cells narrow.

*S. RUFESCENS, sp. nov.*

*Male.* Thorax shining red-brown, with three longitudinal bands of dark-brown hairs; the two outer ones larger than the central, and approaching each other posteriorly. Sides of the chest with brown hairs. Abdomen brown above, sparingly covered with short white hairs; red below. Head shining black; antennæ and palpi brown. Four ocelli in a line. Legs yellow-brown, with short black hairs; two short spines on the end of the tibia. Wings tinged brown; ciliated all round; subcostal vein simple, extending beyond the base of the third posterior cell; lower branch of the discoidal vein faint. Poisers brown.

Length, 2 lines.

Dunedin.

Family—CECIDOMYIDÆ.

Proboscis short. Antennæ long. Head without ocelli. Thighs not terminated by spines. Larvæ living in galls.

## Genus—PSYCHODA.

*Latreille.*

Body short, thick, hairy. Antennæ fourteen- or fifteen-jointed, the first thick, hairy, generally cylindrical, the others pedicellate. Legs short. Wings inclined roof-like, broad, fringed; eight longitudinal veins covered with scales; the second and fifth bifid.

*P. CONSPICILLATA, sp. nov.*

*Female.* Thorax pale brown, with a dark-brown ring on each side, which is broader in front and extends forward nearly to the anterior margin of the thorax: a narrow median longitudinal brown line. Hind thorax and base of wings densely clothed with long white hairs. Scutellum brownish. Abdomen pale brown, with a few scattered white hairs. Head and antennæ yellowish. Legs pale yellow. Wings hyaline, acute at the tip; a few scattered brown hairs on the veins. Eight longitudinal veins, of which the second and fifth are forked; the fork of the second being exterior to the fork of the fifth.

Length, 1 line.

Wellington.

Family—TIPULIDÆ.

Proboscis short. Antennæ long, not plumose in the males. Head prolonged into a rostrum. No ocelli. Legs very long and slender. Larvæ living in the earth or dead wood.

## Genus—TIPULA.

*Linnaeus.*

Muzzle long and narrow. Front plane. The three first joints of the palpi partially fused, *the fourth long and flexible*. Antennæ filiform, almost setaceous, thirteen-jointed, the first elongate cylindrical; the second small, cyathiform; *the ten following cylindrical, with bristles at their bases*; the thirteenth slender, oblong. Wings expanded; five posterior marginal cells, the second of which is petioled.

T. SENEX. *White, Voy. Ereb. and Terror, Insects, p. 27, pl. 7, f. 15* (1848).

Head pale cinereous, with basal fourth and a central oval depression testaceous; prothorax testaceous, with central longitudinal ridge, two lateral cinereous bands; mesothorax and metathorax cinereous, with central and lateral longitudinal dusky bands. Abdomen fulvous; indications of dusky bands of metathorax continued into basal segments. Wings hyaline white; costa to mediastinal vein stramineous; veins testaceous; costa, a spot at first third of discoidal cell, two obliquely just beyond second third, a fourth near apex, and a nebulous striole at apex of cell brown. Poisers pale testaceous; legs testaceous; pectus pinkish-cinereous, with several dusky spots.

Expanse, 2 inches.

New Zealand (Dr. Sinclair).

T. NOVARÆ. *Schiner, l.c., p. 37* (1868).

Brownish-yellow; thorax with four white longitudinal streaks, two of which approximate in front with dark-brown borders; those on the outside lie close to the borders, the inside ones stand at a distance and expose the ground colour in the middle of the thorax as a brown streak, which is divided throughout by a brown double line, and extend over the scutellum and lower part of the back. Behind the transverse suture the white shining longitudinal streaks get nearer, and are also continued over the scutellum and the lower part of the back. In front the markings of the thorax are very sharp; in two male specimens, now before me, the dark-brown lines are less striking than in the female. Sides of the chest with white shining spots. Hind part of the abdomen brownish yellow, the first segment strongly darkened on the sides, and whitish on the upper and hinder margin; the other segments with delicate whitish striæ, and a triangular side spot of the same colour, all of which are conjoined in a broadish side streak; near the hinder end of the abdomen the ground colour is again deepened; the whitish side-streaks appear very

intense in certain directions, but in others disappear almost completely. Genitalia of the male thick, rather erect, obliquely truncated, the claspers bent against each other in an upward direction, like pincers; when at rest the pointed ends are crossed, forming a rather short tube. Head dark reddish-yellow; the muzzle very long, ending in three points, of which the central is scarcely longer than the side ones. Front next the eyes glimmering white, the muzzle brown below. Antennæ short pale yellow, the joints totally bare; the first lengthened as usual, the second very short, the others diminishing in length and breadth towards the end. Palpi yellowish-red, the last joint darkened and distinctly ringed. Lower part of the muzzle, proboscis, and palpi tolerably covered with hair. Legs brownish yellow, the points of the femora and articulations of the tarsi brown. Wings hyaline, naked, the whole surface shining strongly; the mediastinal cell and the lower half of the hinder basal cell with perpendicular small folds, so that they appear shagreened. All the veins bordered with brown, as well as five very distinct brown spots; the first on the base of the basal cells; the second a little beyond the hinder basal cell, lying close to the discoidal cell, which from this point sends a short vein downward; the third on the origin of the radial vein; the fourth as a double spot round the stigma; the fifth beyond the stigma. A whitish lunate patch, in which the veins are totally faded, reaches from the fore part of the edge of the wing to the discoidal cell. Basis and fore edge of wings tinged reddish-yellow; the hind part of the border of the wing with a pale-brownish edge, which is less intense round the veins. Poisers yellow.

Length, 8 lines.

Auckland.

T. HOLOCHLORA. *Nowicki, Memoiren der Krakauer k.-k. Akademie der Wissenschaften, Band 2, gedruckten Aufsatzes* (1875).

*Female.* Greenish-lutinous; palpi and antennæ, except the base, fuscous; wings hyaline; costal cell and stigma pale brownish-green. Length of body, 7-7½ lines. Length of wing, 9 lines.

New Zealand (Edwards).

## Genus—CLONIOPHORA.

*Schiner.*

Head roundish; eyes a little protruding; the epistome lengthened into a short muzzle, which does not end in a point, but is blunt, and bordered with remarkable little hairs at the apex. Palpi four-jointed, second joint shovel-like, third and fourth slim, subequal. Antennæ eighteen-jointed, the first cylindrical, second short, cyathiform; *third*

to thirteenth each bearing an inside appendage which is very short on the third and the thirteenth; the last joints finely bristled. Thorax robust. Abdomen more than three times the length of the thorax, slightly flattened, the horn-like ovipositor projecting nearly half the length of the abdomen, thick at the base, then gradually smaller from the middle, running out into two fine flaps a little bent up, the lower piece only reaching to the middle of the upper. Legs rather strong; the tibiæ spurred at the end, the empodium strongly developed. Wings long and proportionately smaller than in *Gynoplista*. Medias-tinal vein long, the cross vein with the subcostal close up to the point; the sub-branches of all the veins much larger than in *Gynoplista*, consequently the discoidal cell is placed towards the middle of the wing. Poisers with a broad head.

C. SUBFASCIATA. *Walker, l.c., p. 74 (Gynoplista) (1848).*

Body dark ferruginous; head brown; antennæ black, tawny at base, slightly branched on the inner side, shorter than the thorax. Eyes and palpi black. Thorax with four hoary stripes, which are united in the rear, and there overspread the whole hinder back. Ovipositor long. Feet tawny; thighs brown, with pale-tawny bands near their tips; tips of the tibiæ and tarsi brown. Wings with a slight tawny tinge, having each two brown bands, which are distinct on the fore-border, but pale, interrupted, and almost obsolete towards the hind-border; veins brown. Poisers yellow, with tawny knobs.

Length, 7 lines.

New Zealand (Dr. Sinclair).

### Genus—MEGISTOCERA.

*Wied.*

Joints of the palpi nearly equal. Antennæ setaceous, very long, ten-jointed; the first cylindrical, thick; the second cyathiform; the others cylindrical, getting longer towards the end. Tarsi very long. Wings open; the cells as in *Tipula*.

M. VULPINA, *sp. nov.*

Thorax and scutellum cinereous. On the thorax before the suture four longitudinal well-marked dusky bands; the two internal extending the whole length; the two external short, extending only from the suture half-way to the anterior margin. Thorax and chest with long yellow hairs. Abdomen fulvous, with silvery scales; a medium dorsal dusky band on the three anterior segments. Head cinereous, with long yellow hairs. First joint of the antennæ cinereous, the rest dusky; proboscis cinereous; palpi black, with silvery scales,



Legs dusky, the proximal half of the femora ferruginous. Wings hyaline with dusky veins; stigmatic region dusky. Poisers brown.

Length, 4 lines; of antennæ, 9 lines.

Dunedin.

### Genus—LIMNOBIA.

*Latreille.*

*Joints of the palpi nearly equal in length*, the three first rather thicker anteriorly, equal in length; the fourth rather longer, slim and cylindrical. Antennæ filiform, generally sixteen-jointed; the first cylindrical, short; the second cyathiform, the following globular, the last oblong. Wings closed; subcostal cell sometimes closed by the radial vein; generally a cubital cell; four posteriors.

L. CONVENIENS. *Walker, l.c., p. 57* (1848).

Body and wings pale-tawny; eyes black; tips of feet brown; wings colourless; veins tawny; the first and second longitudinal simple; the third has a short cross upright vein, which connects it with the fourth, and the latter just after this junction sends forth a similar vein to the fifth; the fifth beyond half its length sends forth a branch which is forked.

Length,  $2\frac{1}{2}$  lines; of wings, 6 lines.

New Zealand (Dr. Sinclair).

L. VICARIANS. *Schiner, l.c., p. 46* (1868).

Rust-red; the thorax with a dark-brown longish streak which reaches to about the middle, and is nowhere sharply bounded. Head, antennæ, and palpi rust-red. Legs pale yellow, the points of the tibiæ and thighs a little darker, the middle pair of femora with a darkening in the middle. Wings tinged pale yellow; a small spot on the base of the radial vein, and a larger one like it on the edge.

Length,  $2\frac{1}{2}$ –3 lines.

Auckland.

### Family—BIBIONIDÆ.

Proboscis short. Antennæ shorter than the head and thorax, *generally with less than twelve joints*. Legs moderate. Larvæ generally living in cow-dung.

### Genus—BIBIO.

*Latreille.*

Head in the male almost entirely occupied by the eyes; in the female small, elongated, and inclined. Proboscis salient, terminal lips indistinct; labrum and labium ciliated towards the extremity.

Palpi five-jointed, the first very small. Antennæ cylindrical, perfoliate, inserted under the eyes, nine-jointed, the two first separated from the others, the remainder very short. Eyes hairy in the male, naked and small in the female. Abdomen of male terminated by two hooks and two tubercles. Legs hairy; anterior thighs short, swollen in the female; the posterior elongated in the male; tibiæ grooved; the anterior short, swollen, terminated by a long and a short spine; the posterior swollen in the male; joints of the tarsi elongated; three cushions at the extremity. Two basal cells in the wings.

B. NIGROSTIGMA. *Walker, l.c., p. 121 (1848).*

*Male.* Body black, shining, thinly clothed with black hairs; antennæ black; eyes dark red; legs black; wings clear-brown; brands, fore-border, and adjoining veins black; the other veins tawny; poisers dull brown, with piceous knobs.

*Female.* Thorax red, with a black lobe on each side in front; hips and thighs red. Length 3–3½ lines.

New Zealand (Dr. Sinclair).

B. RUFICOXIS. *Macquart, Dipt. Exot., Supp. iv., p. 17, pl. 1, f. 10 (1850).*

*Female.* Proboscis, palpi, and antennæ black. Front fulvous. Thorax and scutellum entirely fulvous. Abdomen fulvous. Legs black, the coxæ red. Wings fuscous, the transverse vein which closes the posterior basal cell\* closely approaching the base of the second posterior cell.

Tasmania (Macquart); New Zealand (Novara Exp.).

### Genus—DILOPHUS.

*Macquart.*

Like *Bibio*, but the femora spinose, and the prothorax pectinated.

D. SPECTABILIS. *Nowiki, l.c., p. 10 (1875).*

*Female.* Black; coxæ and femora rufous; mesothorax variegated with red and black; wings rather smoky, the stigma oblong, black.

Length, 4¼ lines; wings, 4¼ lines.

New Zealand (Edwards).

### Genus—SIMULIA.

*Latreille.*

Fourth joint of the palpi rather elongated and slender. Antennæ cylindrical, eleven-jointed, the two first of which are separated from

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\* Macquart calls this the interno-median cell.

the others. Eyes round. No ocelli. First joint of the tarsi as long as all the others together. Wings very broad, basal and subcostal cells very narrow.

*S. AUSTRALIENSIS.* *Schiner, l.c., p. 15* (1868).

Blackish-brown, thorax dusted lighter; yellow round the corners of the shoulders. Base of the femora, tibiæ, and tarsi yellowish. Wings hyaline; costal vein intense black, not nearly reaching the point of the wing; the other veins brownish; discoidal vein thick as far as the cross vein, then very faint, the forks with a short petiole; postical and anal veins faint.

Length,  $\frac{3}{4}$  line.

Auckland.

This is the common sandfly of New Zealand.

#### Division—BRACHYCERA.

Antennæ short, not more than three-jointed, of which, however, the last may be complex. Palpi one- or two-jointed.

#### Family—TABANIDÆ.

Body large. Head depressed. Proboscis long, the terminal lips elongated, containing in the male four, in the female six, lamelliform bristles. Palpi inserted at the base of the maxillary bristles, elevated in the male, lying under the proboscis in the female; the second joint generally ovoid in the male, conic in the female. Third joint of the antennæ with four to eight divisions; no style. In the male the facets of the lower half are smaller. Middle tarsi terminated by two spines; tarsi with three cushions. Wings generally expanded; five posteriors, generally open at the extremity; anal cell elongated.

#### Genus—TABANUS.

##### *Linneus.*

Proboscis inclined in the male, perpendicular in the female. Third joint of the antennæ elongated, dilated above at its base, then sloped above with a spine at its base; five divisions, of which the four last are small. Front of the male with slight callosities anteriorly. No ocelli.

*T. IMPAR.* *Walker, l.c., Supp., p. 258* (1854).

*Male.* Black; antennæ fulvous at the base; sides of the thorax ferruginous; abdomen ferruginous, ornamented with a short dorsal black band and fascia, also a yellow fascia and fulvous three-sided spots. Tibiæ fulvous; tarsi pitch-brown. Wings grey.

*Female.* Brown; thorax with the sides and three longitudinal bands fulvous; breast hoary; abdomen fulvous, apex pitch-brown. Legs fulvous.

New Zealand (Colonel Bolton).

*T. SARPA.* *Walker, l.c., Supp., p. 255 (1854).*

Brown; thorax with four hoary bands; breast white. Abdomen pitch-brown, below hoary; the segments margined posteriorly with fulvous. Legs fulvous; femora cinereous; tarsi black. Wings greyish.

*T. TRUNCATUS.* *Walker, l.c., Supp., p. 255 (1854).*

Brown; antennæ black, the bases pitch-brown. Thorax with three cinereous bands, the sides and the breast hoary. Abdomen cinereous, ornamented with sub-interrupted brown bands. Legs fulvous; anterior femora and tarsi black. Wings grey, subfulvous at the base and costa.

Auckland (Colonel Bolton).

*T. OPLUS.* *Walker, l.c., Supp., p. 255 (1854).*

*Male.* Brown; antennæ and legs fulvous; breast hoary; abdomen ferruginous, with an interrupted black band. Tarsi brown. Wings greyish.

Auckland (Colonel Bolton).

*T. SORDIDUS.* *Walker, l.c., Supp., p. 256 (1854).*

Black; head clothed with hoary tomentum and down. Palpi tawny. Thorax with three hoary stripes, clothed with hoary hairs; a few black hairs on each side, and a ferruginous callus before each wing. Abdomen tawny with a black stripe, which is interrupted on the hind-border of each segment, and is dilated at the base and towards the tip; hind-borders of the segments testaceous. Posterior tibiæ tawny. Wings grey; veins black, clouded with brown; first branch of the cubital vein simple, hardly angular near the base; sub-anal joining the anal at some distance from the base. Poisers tawny.

Length,  $6\frac{1}{2}$  lines.

New Zealand (Colonel Bolton).

*T. BRATRANKII.* *Nowicki, l.c., p. 19 (1875).*

*Male and Female.* Isabella-brown; breast blackish; abdomen, except a middle series of triangular spots, and the posterior and lateral margins of each segment, deep fuscous, frequently tinted a

sordid red towards the base of the abdomen; eyes hairy, unicoloured; first two joints of the antennæ red, the third black, narrow; halteres blackish-brown; wings brownish-cinereous, the veins and stigma brown; hairs all over the body almost all pale.

*Male.* Palpi short, last joint ovate; eyes touching; thorax and scutellum brown-black; femora black, tibiæ and the extreme apices of the femora red; tarsi, except the base, black-brown.

*Female.* Palpi elongated, last joint narrow and prolonged; front between the eyes narrow and equal, with a small callus inferiorly; legs red; tarsi, except the base, fuscous.

Length,  $6\frac{1}{4}$ – $7\frac{1}{4}$  lines. Wing, 6–7 lines.

New Zealand (Edwards).

T. TRANSVERSUS. *Walker, l.c., Supp., p. 256 (1854).*

*Male and Female.* Testaceous. Head and thorax with white tomentum beneath. Antennæ tawny, small, slightly curved, with black tips; third forming an obtuse angle above. Thorax with four brown stripes. Abdomen brown above, excepting a dorsal stripe and the hind-borders of the segments. Tarsi brownish. Wings greyish; veins tawny; stigma brown; transverse veins black, first branch of the cubital vein simple; sub-anal vein joining the anal close to the border.

Length,  $3\frac{1}{2}$ –4 lines.

Auckland (Colonel Bolton).

## Genus—PANGONIA.

### *Latreille.*

Proboscis long, slender, horizontal; terminal lips indistinct. Face convex. Third joint of the antennæ with eight divisions, of which the first is thick, and the last rather longer than the others. First posterior cell generally closed before the extremity.

P. LARDA. *Walker, Ins. Saund., Dipt. 1, p. 16 (1850).*

Head pale yellow above, hoary and thickly clothed with pale-yellow hairs beneath; a ferruginous club-shaped mark on the crown. Eyes black, clothed with hoary hairs, parted above by a moderate interval; the facets very small. Sucker black, a little shorter than the chest; lancets bright ferruginous; compound joint curved upward, tapering from the base to the tip, much longer than the three preceding joints. Chest black; sides ferruginous, clothed with tawny hairs; breast hoary, clothed with tawny hairs. Abdomen ferruginous, obconical, a little broader and longer than the chest; clothed with

tawny hairs, which are chiefly on the hind-borders of the segments; the back adorned by an interrupted black stripe, which is widened on the fore-borders of the segments. Legs ferruginous; hips and thighs thinly clothed with long pale hairs; shanks and feet covered with pale down; four hinder thighs tipped with spines; claws black. Wings grey, brown at the base, beneath the fore-borders, and along the veins; wing-ribs pitchy; veins black, pitchy at the base and along the fore-border; angle of the tip cross-vein obtuse, distinct. Scales grey, with darker borders. Poisers tawny.

Length,  $6\frac{1}{2}$  lines.

New Zealand.

P. ADREL. *Walker, Ins. Saund., Dipt.* 1, p. 16 (1850).

Body dark brown. Head pale tawny, and clothed with tawny hairs in front; hoary and clothed with pale-yellow hairs beneath and behind. Eyes black, thickly clothed with short black hairs, and in front and on each side with pale-yellow hairs; all the facets very small. Sucker black; palpi black, clothed with black hairs. Feelers black, first and second joints thickly beset with long black bristles; third short, slightly convex above and beneath; compound joint rather long, not very compact, tapering and much curved upward from the base to the tip. Chest clothed with short dark tawny hairs, fringed on each side with longer pale-yellow hairs. Abdomen black, somewhat obconical, very much broader and a little longer than the chest; a stripe composed of tufts of pale-yellow hairs along the back, and a larger tuft of the like hairs on each side of the tip; hind-borders of the segments fringed with pale-yellow hairs. Legs black; hips and thighs tinged with grey, clothed with pale-tawny hairs; shanks beset with very short black bristles; foot-cushions pale-tawny. Wings grey, mostly dark brown towards the base and beneath the fore-border; wing ribs pitchy; veins black; curve of the tip cross-vein slight; posterior submarginal areolet closed near the border. Scales grey. Poisers yellow.

Length, 6 lines.

New Zealand.

P. HIRTICEPS. *Nowicki, l.c., p.* 17 (1875).

*Male and Female.* Brownish-black, clouded; antennæ subulate; palpi narrow; proboscis short and thick; legs near the end altogether black; the two first abdominal segments broadly margined laterally, the following ones coriaceous on the posterior margins, with pale-luteous hairs below, and with pale luteous and black above; thus, on

the anterior margin of the thorax, and posterior angles and middle of the posterior margins of the second, third, and fourth abdominal segments, all the hairs are pale, on the lateral margins of the abdomen black and pale fasciculi alternate conspicuously. Wings cinereous, smeared with black; the first posterior cell narrow, the fourth broadly open, the anterior branch of the third longitudinal vein not appendiculate.

Length,  $6\frac{3}{4}$ – $7\frac{1}{4}$  lines. Wing, 6–7 lines.

New Zealand (Edwards).

### Genus—PELECORHYNCHUS.

#### *Macquart.*

Head as large as the thorax. Proboscis as long as the head; lips thick, in form of a hatchet; palpi short, rounded, depressed. Face hairy, and convex in the male, less so in the female. Antennæ as in *Pangonia*. Eyes naked. Ocelli. Posterior femora without spurs, shortly ciliated outside and inside. First posterior cell open.

Australia.

P. ORNATUS. *Schiner, l.c., p. 98* (1868).

*Female.* Thorax black, with brown tomentum; two black clavate spots on the tip, close to two slate-blue longitudinal streaks which join behind, just in front of the scutellum; hairy on the sides; a bunch of red hairs at the base of the wings, and further behind whitish hairs; breast yellowish-white with a few black hairs in the middle. Scutellum black, hairy, the point with a bunch of red hairs. Abdomen black; first segment with a whitish semicircle which ends in a four-cornered spot; fifth segment with a transverse band; second to fourth with a seam of reddish hair on the back, the lower surface like the upper, the white transverse markings rather larger. Head with the convex part of the face brownish, with black hairs; sides with whitish down; front brown with lateral bands of brown down, and a little white down in front of them. Palpi testaceous, with white hairs. The two first joints of the antennæ brown, as also are the four last divisions of the third, the rest red. Legs dark yellowish-red, with pale-yellow hairs. Wings hyaline, with dark-brown rim, and three spots of the same colour; the first on the base of the basal cell; the second from the middle cross-vein to the postical vein; the third broken up into spots.

Length, 6 lines.

Auckland.

## Family—BOMBILIIDÆ.

Antennæ long, three-jointed, sometimes far apart; eyes large, connivent in the <sup>♂</sup> males; proboscis sometimes as long as the body, with bristle-like piercers; abdomen often woolly, with six or seven segments. Larvæ parasitic on other insects in whose nests they live; pupæ with hook-like bristles.

## Genus—COMPTOSIA.

*Macquart.*

Proboscis rather elongated and generally obliquely elevated between the antennæ. Face oblique, rather protruding above. Front linear, the anterior portion triangular. Antennæ approximated, the third joint conical, the style as long as the joint. Abdominal segments bordered with little bristles. Wings rather narrow.

C. BICOLOR. *Macquart, Dipt. Exot., Supp. 4, p. 114 (1850).*

*Female.* Sides of the face testaceous. Front black, without down, but with little black hairs. Antennæ black. Thorax black (rubbed), humeral spots testaceous, another spot of the same colour on each side of the posterior margin; sides testaceous with black spots. Abdomen bluish-black (rubbed) below, and legs testaceous; the two last joints of the tarsi black. Wings greyish, the exterior margin brownish; two cubital cells, the second appendiculate.

Length,  $5\frac{1}{2}$  lines.

East coast of Australia (Macquart); New Zealand ("Reise der 'Novara'").

C. FASCIATA. *Fabricius, Systema Antiliatorum, p. 118 (Anthrax), (1805).*

Body black, hairy. Wings black, with a small white band near the apex.

Islands of the Pacific Ocean (Fabr.); New Zealand ("Reise der 'Novara'").

## Family—INFLATÆ.

Head bent down, small, entirely occupied by the eyes; thorax and six-segmented abdomen large, inflated; proboscis variable, sometimes longer than the body and turned under the thorax, or absent; bristles four; palpi rudimentary.

## Genus—HENOPS.

*Illiger.*

Proboscis not apparent. Antennæ inserted on the lower part of the head, very small, two-jointed; the first tuberculiform; the last



oval; style elongated, a little enlarged at the extremity. Eyes naked. Abdomen broader than the thorax. A discoidal cell; subcostal narrow; cubital large; four incomplete posterior cells.

H. BRUNNEUS, *sp. nov.*

Thorax and scutellum pitch-brown, with scattered yellow-brown hairs. Abdomen brown, the posterior margin of each segment yellow above. Head black: eyes meeting. Antennæ pitch-brown. Legs brown. Wings hyaline; the costal and subcostal veins brown.

Length, 3 lines.

Lake Wanaka.

Family—ASILIDÆ.

Body elongated; head with appendages; the united mandibles and epipharynx form a piercer; maxilla sharp; labium pointed; tarsus with two pulvilli; antennæ three-jointed.

Genus—SAROPOGON.

*Loew.*

Proboscis rather swollen in the middle. The two first joints of the antennæ short, nearly equal; the third elongated, compressed, rather fusiform; style short, slender, conical, often of two distinct joints. Abdomen cylindrical or depressed, obtuse; genitalia hidden in the male; anus with a row of points in the female. Anterior femora furnished with a spine at the extremity. Subcostal cell; and four posteriors open.

S. VIDUUS. *Walker, l.c., p. 354 (Dasypogon), (1849).*

Body black; head narrower than the thorax, clothed with grey down, beset behind the eyes with a row of black bristles, thinly clothed beneath with grey hairs; crown piceous, beset on each side with black hairs; epistome armed with twelve long black spines; eyes black; forepart flat; its facets a little larger than those of the convex part. Lip piceous, clothed at the tip with tawny hairs; hypostoma and palpi black, clothed with black hairs. Antennæ black; first and second joints with long black hairs; second joint a little shorter than the first; third joint spindle-shaped, nearly as long as the first and the second, clothed above with short black hairs; fourth joint short; fifth extremely short. Thorax covered with grey down, beset on each side and behind with long black bristles; disc black, excepting two grey stripes which are widened in front and behind, and are beset with a few short black hairs. Abdomen slightly shining, with an indistinct grey stripe on each side, tapering from the base to the tip, narrower

than the thorax and more than twice its length, thinly clothed with very short black hairs, and having also a few longer grey hairs at the base and on the underside; the black hairs are more numerous at the tip; first and second segments short; third and following segments long, but successively decreasing in length; third segment with a cross row of punctures on the furrow near the base. Legs black, thinly clothed with short grey hairs; shanks and feet beset with black spines; feet long, clothed beneath with dark tawny brown; claws black; foot-cushions dark tawny; tips of fore-shanks armed with a curved black tooth, corresponding with a large black tubercle at the base of the fore-feet. Wings very slightly grey, dark grey at the tips; wing-ribs piceous; veins black, piceous at the base. Poisers yellow.

Length, 6–7 lines.

New Zealand (Colenso).

S. *discus*. *Walker, l.c., p. 358 (Dasypogon), (1849).*

*Female.* Body black. Head covered with tawny down, a little narrower than the thorax, covered on each side of the crown with a few black hairs, beset behind the eyes with a row of black bristles, clothed beneath with long pale-yellow hairs; front and epistome adorned with bright pale-golden down; clypeus armed with ten long white bristles; eyes black, fore-part nearly flat, distinguished also from the other part by the larger size of its facets; lip black, clothed at the tip with short tawny hairs; palpi and hypostoma black, clothed with long pale-yellow hairs. Antennæ black, first and second joints with black hairs; second joint slightly club-shaped, beset with one or two black bristles, a little shorter than the first; third joint linear, longer than the first and the second; fourth joint very short; fifth obsolete. Thorax covered with tawny down, which forms two stripes in the middle, thinly clothed with short black hairs, and beset on each side with some black bristles; breast covered with pale-tawny down, having a hoary tinge. Abdomen above black, and thinly clothed with very short pale-tawny hairs, red at the tip and along the sides, tawny and shining beneath, almost linear, nearly as broad as the thorax and more than twice its length; first and second segments short; third segment long, with a cross row of punctures along the furrow near its base; the following segments successively decreasing in length. Legs red, almost hairless, beset with black spines, which are much more numerous on the feet than on the shanks or thighs; thighs paler at the base; feet black, red at the base; claws black; foot-cushions pale brown; a black stripe on each fore-thigh; tip of

fore-shafts armed with a black curved tooth, corresponding with some black tubercles at the base of the fore-feet. Wings colourless, grey at the tips; wing-ribs ferruginous, veins piceous, black towards the tips. Poisers large, yellow.

Length, 6 lines.

New Zealand (Earl).

S. ANTIPODUS. *Schiner, l.c., p. 166* (1868).

*Female.* Brownish-red; thorax with golden-yellow longitudinal bands, and the same colour on the shoulders and suture. Scutellum, thorax, and sides of breast shining golden yellow; sides of the breast below the root of the wing with a four-cornered space free from yellow dust. Abdomen shining, tapering towards the end; first segment black on each side of the base; second, black in front. Genitalia of female encircled with points. Head blackish; epistome broad, golden yellow, beard yellow; palpi blackish-brown, with shining black hairs. Antennae blackish-brown; the two first joints with strong black bristles; the third long, flat, naked; the small style bud-like. Head dusted gold-yellow, black in the middle; legs rust-yellow; hips shining white, the upper part of the thighs with black stripes; tarsi, except metatarsi, blackish-brown. Body naked, bristles on legs black. Wings pale brownish-yellow, veins brown; second posterior cell very small, the fourth open but narrowed towards the end; anal cell open.

Length, 6 lines.

Probably the same as the last.

### Genus—ITAMUS.

*Loew.*

Black-grey species, of medium or somewhat considerable size, with more or less expanded reddish-yellow coloration of the tibiae. The female ovipositor in all the species is of quite extraordinary length. The male genitalia brilliant black, swollen out thick.

This genus is formed from the group of *Asilus cyandrus*.

I. INQUISITOR. *Nowicki, l.c., p. 21* (1875).

*Male and Female.* Black; shoulders, lateral margins, and posterior angles of thorax, scutellum, and the greater part of the legs reddish-bay; femora smeared with black below, all the tarsi blackish-brown; whiskers, except the lower part, front, antennae, thorax, and tarsi black; nearly all the rest of the body with whitish hairs; circles behind the setae, all the thorax and legs with black hairs; abdomen with whitish hairs; wings hyaline, the apex broadly cinereous.

*Male.* Hypopygium large, subtumid, reddish-bay. Length, 8 lines; wing,  $6\frac{1}{2}$  lines.

*Female.* Abdomen from the apex to the sixth segment compressed into a borer. Length,  $8\frac{1}{2}$  lines; wing,  $6\frac{3}{4}$  lines.

New Zealand (Edwards).

I. MELANOPOGON. *Schiner, l.c., p. 190 (1868).*

Black. Thorax and scutellum dusted yellow, general marks blackish; middle streak separated by a fine line, lateral streaks interrupted; scutellum with whitish hairs, the bristles black; sides yellow spotted with black. Abdomen blackish, the sides dusted yellow, and with yellow bristles; genitalia in the male black, thick, clavate. Lower face yellow; projecting mystax black; antennæ black; hairs black. Legs black; femora yellow-grey, the intermediate pair with a black spot; tibiæ, except the points, rust-yellow; the short hairs on the thighs black and yellow. Wings intense brownish-yellow, the apex and greater part of the posterior margin grey.

*Female.* Incisions of the abdomen broader and more distinct; ovipositor black, drawn out. Halteres yellow.

Length, 8– $8\frac{1}{2}$  lines.

Perhaps the same as *Asilus varius*.

## Genus—ASILUS.

*Linnaeus.*

Upper lip obliquely truncated. First joint of the antennæ rather long; the third long, subulate, compressed; style setaceous, rather long, two-jointed. Abdomen elongated, narrowed posteriorly. Genitalia large in the male; the borer compressed and bivalve in the female. Subcostal cell generally small, sometimes longer than the first; fourth posterior cell closed.

A. VARIUS. *Walker, l.c., p. 457 (1849).*

Body dark brown. Head tawny, as broad as the thorax, clothed behind and beneath with white hairs, and above with black hairs, beset with black bristles along the upper hind borders of the eyes; front clothed with golden down; *epistome thickly beset with black bristles*; eyes dark red, the fore-part flat, composed of larger facets than is the other part; lip black, shining, clothed at the tip with short tawny hairs; palpi black, beset with black bristles. Antennæ black; first and second joints thickly clothed with black hairs; second joint club-shaped, much shorter than the first; third joint with a piceous tinge, tapering from the base to the tip, rather longer than the first and second joints; fourth and following joints forming a

bristle, which is a little shorter than the third joint. Thorax adorned with three bright yellowish-white stripes; middle stripe very slight and indistinct, side stripes joined by two oblique bands with the sides of the chest, which like the breast are also bright yellowish-white; sides and side stripes beset with long black hairs and bristles; scutellum and hind thorax pale tawny. Abdomen thinly clothed with short tawny hairs; hind borders of the segments pale bright yellow, clothed on each side towards the base with tawny bristles; first and second segments very short; third and following segments long but successively decreasing in length; appendages at the tip very large, black, shining, clothed with tawny and black hairs, and with some black bristles; under-side tawny. Legs black, thick, clothed with short ferruginous hairs, and beset with stout black spines; shanks red with black tips; claws black; foot-cushions dull tawny. Wings colourless, with very slight tawny streaks along the veins; grey on the tips and on the discs of the areolets along the hind borders; wing-ribs and veins black. Poisers yellow.

*Female.* Abdomen full twice the length of the thorax; segments from the seventh to the ninth compressed, black, shining; tips of the wings paler than those of the male.

Length,  $6\frac{1}{2}$ – $8\frac{1}{2}$  lines.

New Zealand (Dr. Sinclair and Earl).

A. BULBUS. *Walker, l.c.*, p. 465 (1849).

Body piceous. Head narrower than the thorax, covered with tawny down, clothed behind and beneath with pale-yellow hairs, beset behind the eyes with some black bristles; sides of the crown thickly covered with black hairs; epistome thickly covered with long black bristles; eyes dark bronze, fore-part flat, its facets somewhat larger than those of the other part; lip black, clothed at the tip with short tawny hairs; palpi black, clothed with long pale-yellow hairs; tongue ferruginous. Antennæ black, first and second joints beset with black hairs; second joint full half the length of the first; third joint rather broad, obconical at the base, tapering thence to the tip, beset with a very few short and slender hairs; style stout, nearly as long as the third joint. Thorax thinly clothed with short black hairs, beset on each side and behind with a few black bristles, adorned with three dark-tawny stripes, middle stripe very slender; side stripes connected by two oblique tawny bands with the sides of the chest, which are also tawny; shoulders and breast ferruginous, the latter covered with a grey bloom. Abdomen narrower than the thorax, rather more than twice its length in the male, and about thrice its length in the female,

tapering from the base to the tip, compressed and lengthened towards the tip in both sexes, clothed with short black hairs and with a few long whitish hairs (the latter are chiefly towards the base and on the under-side); first and second segments short; third and following segments long. Legs dark ferruginous, clothed with short black hairs, armed with black spines; feet black; foot-cushions piccous. Wings whitish-brown at the tips; wing-ribs piccous; veins black, piccous towards the base. Poisers tawny.

Length,  $6\frac{1}{2}$ –10 lines.

Var.  $\beta$ . Thighs black.

New Zealand (Colenso).

A. LASCUS. *Walker, l.c., p. 466 (1819).*

Body slender, brown. Head as broad as the thorax, covered with dark tawny down, beset behind the eyes with a few black bristles, thinly clothed beneath with whitish hairs; *epistome armed with long white bristles*; eyes bronze, fore-part nearly flat, its facets larger than those of the other part; lip black, clothed at the tip with short white hairs; palpi black, beset with long black hairs. Antennæ black; first and second joints beset with a few black hairs; second joint slightly club-shaped, tawny in the female, rather more than half the length of the first; third joint tapering from the base to the tip, as long as the first and the second, tawny at the base in the female; style stout, rather more than half the length of the third joint. Thorax beset on each side and behind with a few black bristles, adorned with three incomplete tawny stripes; sides tawny; breast hoary. Abdomen piccous, narrower than the thorax and more than twice its length, clothed with tawny hairs, slightly tapering from the base to the tip; first and second segments very short; third and following segments long, successively decreasing in length. Genitalia of the male small, tip of the female compressed. Legs dull tawny, clothed with short tawny hairs, armed with long tawny bristles; thighs and shanks striped with piccous, especially towards the tips; feet piccous, tawny at the base; claws black; foot-cushions tawny. Wings light tawny, grey at the tips, and along the hind-borders; wing-ribs piccous, veins black, piccous at the base. Poisers tawny.

Length, 5–6 lines.

New Zealand (Colenso).

### Genus—LAMPRIA.

*Macquart.*

Body slender, naked or covered with down. Head depressed; neck rather elongated. Face salient below, mystax covering the

salient composed of long hairs bordered by still longer and thicker bristles. Proboscis elongated, the extremity obtuse. Palpi slender, a little hairy. Third joint of the antennæ straight above, slightly convex below, and ending in a point. Legs with long hairs; posterior femora thick, straight below, very convex above; posterior tibiæ terminated by an obtuse point, bordered with short bristles. Terminal vein of the fourth posterior cell slightly rounded. Colours brilliant.

L. *ÆNEA*. *Fabricius*. *L. colorata*: *Boisduval*, *Voy. "Astrolabe."* *L. ænea*: *Macquart*, *Dipt. Ex.* 1, *pt.* 2, *p.* 61, *pl.* 6, *fig.* 1.

Metallic blue. Abdomen marked on each side with white. Whiskers golden. Wings blackish-brown.

Length, 7 lines.

Java; Solomon Islands and New Ireland (*Macquart*); New Zealand (*Nowicki*).

Family—MIDASTIDE.

Proboscis generally short. Antennæ generally longer than the head, five-jointed; the third very long, the fourth shorter; fifth clubbed, excavated at the extremity.

Genus—MIDAS.

*Fabricius*.

Proboscis short; terminal lips triangular, compressed.

M. *MACQUARTI*. *Schiner*, *l.c.* *M. clavata*: *Macquart*, *l.c.*, *Supp.* 4, *p.* 59, *pl.* 4, *f.* 5 (1850).

Proboscis a little elongated. Palpi black. Face shining-black, the moustache yellowish. Front black. Antennæ black; the first joint rather elongated and thick. Thorax black, slightly shining, with two bands of yellow down; shoulders prominent, fulvous; a fulvous spot on each side on the posterior border; sides shining-black; scutellum fulvous, a small black spot in the middle. Abdomen compressed, shining-black; second to the fifth segments with a lateral fulvous spot, broad on the anterior border, ending in a point before reaching the posterior border; belly with lateral elongated spots. Coxæ black; femora fore and middle black, with a little yellow at the base and at the tip; the hind pair with the anterior portion slender and yellow, the posterior portion with two rows of spines below; anterior and middle tibiæ black outside, yellow inside; the posterior pair black with yellow at the base; tarsi black, the first joint of the anterior pair yellow, and the first and second joints of the middle and hinder pairs yellow; first joint of the posterior pair with spines below.

Wings yellowish, the exterior border brown; marginal and the two submarginal cells closed; the second submarginal with a long petiole; five posterior cells.

Length, 6 lines.

East coast of Australia (Macquart); New Zealand ("Reise der 'Novara'").

Family—THEREVIDÆ.

Tarsus with two pulvilli; proboscis short; pupa spiny; style of the antennæ apical.

Genus—THEREVA.

*Latreille.*

Palpi cylindrical, terminated by a rounded swelling. First joint of the antennæ elongated, cylindrical; the third conical, a little swollen in the middle; style short, two-jointed.

T. BILINEATA. *Fabricius, Syst. Ent.* (1775), p. 757 (*Bibio*).

Head black; antennæ approximated. Thorax hairy, black, with two white longitudinal lines. Abdomen subconical, elongated, black. Wings white, the exterior margin black. Legs black, the bases of the tibiæ ferruginous.

New Zealand (Sir J. Banks).

Genus—ANABARYNCHUS.

*Macquart.*

Head hemispherical. Proboscis salient, elevated above the face and reaching the base of the antennæ; terminal lips thick. Palpi hidden. Face short, nearly naked. Front of female elongated, narrow, no callosities. Antennæ inserted towards the lower part of the head, inclined, not quite so long as the head; first joint rather elongated, cylindrical; second short, cyathiform; third less elongated than the first, thick, terminated by a point; style short. Eyes naked. Abdomen conical. Legs slender, thighs without bristles; the posterior furnished with a single one near the extremity. Wing-veins as in *Thereva*.

A. LURIDUS. *Schiner, l.c.*, p. 148 (1868).

*Male.* Brown, dusted with yellow. Thorax with darkish longitudinal streaks; the middle one line-like, and outside it another rather broad streak, interrupted on the suture, and a small brown streak which does not reach the suture; sides of the chest greyish;



sides of the thorax with black bristles; sides of the chest with slender silk-like white hairs. Abdomen shining-white, with white incisions and white sides; hairs thin and white, on the end of the abdomen black. Head brown, epistome and front dusted with brownish-yellow; front lighter, with short black hairs. Antennæ blackish-brown; first joint with black hairs; the third with a distinct constricted style. Proboscis and palpi light-brown, the end of the former reaching close up to the antennæ. Legs dirty-yellow, hips dusted with whitish-grey; thighs strongly darkened and with fine white tomentum outside. Wings tinged with dirty-yellow; the veins brown.

Length, 5 lines.

Auckland.

Family—*DOLICHOPODIDÆ*.

Legs long; pulvilli three; proboscis short.

### Genus—*PSILOPUS*.

*Meigen*.

Face broad in both sexes. Palpi with one bristle. Third joint of the antennæ generally round, the style inserted near its extremity. Eyes generally hairy in the male. Abdomen long and slender; appendices filiform. Legs very long and slender, anterior thighs with bristles above. Four posterior cells, the second incomplete.

*P. GEMMATUS.* *Walker, l.c., p. 647 (1849).*

Body bright bluish-green, beset with black bristles. Head covered in front with white down; eyes bright-red; mouth tawny; antennæ black, style nearly as long as the thorax. Breast and sides of the chest covered with whitish bloom. Abdomen golden green, bluish-green at the base. Legs pale yellow, clothed with very short black bristles; feet darker, pitchy towards their tips. Wings slightly grey; wing-ribs and poisers tawny; veins black; curve of the tip cross-vein unusually slight.

Length, 2 lines.

New Zealand (Dr. Sinclair).

### SECTION—*COARCTATÆ*.

The pupæ are formed within the larval integument, which hardens into a pupa-shell.

Family—*STRATIOMYIDÆ*.

Antennæ three-jointed, the third joint generally five- or six-ringed, and often terminated by a style; proboscis with a terminal fleshy lip.

*Division A.*

Abdomen narrow, with seven distinct segments.

## Genus—DIPHYSA.

*Macquart.*

Palpi very short; antennæ ten-jointed, longer than the head, flagellum sub-linear, style none. Scutellum with four spines.

D. APICALIS. *Walker, l.c., p. 1151 (1849). Voy. "Ereb." and "Terror," Insects, pl. 7, f. 17.*

Head black, hoary in front; eyes pitchy-black; facets of the fore-part rather larger than those elsewhere; palpi and sucker tawny; second joint of the palpi spindle-shaped, not broader than the first; antennæ black, filiform, dark red towards the base, nearly as long as the thorax. Thorax and breast dark purple. Thorax with golden down which forms three stripes. Scutellum tawny, armed with four teeth. Abdomen tawny, a little narrower than the chest and nearly twice its length, slightly decreasing in breadth from the base to the tip, which is purple. Legs tawny; hind legs long, their thighs club-shaped, fore feet pitchy. Wings colourless on the disc, tawny along the fore border, grey along the hind border and the tip; adorned with a blackish band, which does not reach the hind border; wing-ribs and veins tawny, veins pitchy on the blackish band. Poisers pale yellow.

Length,  $3\frac{1}{2}$  lines.

New Zealand (Sir J. Hooker).

## Genus—ACTINA.

*Meigen.*

Palpi long. Antennæ sub-fusiform; style none; flagellum sub-conical. Scutellum armed with spines.

A. SUBSTITUTA. *Walker, l.c., Supp., p. 12 (Beris), (1854).*

Dull green, or æneous-green. Antennæ black. Palpi testaceous. Scutellum with four tawny spines. Abdomen purplish-cupreous. Legs tawny; femora and tibiæ with brown bands. Wings greyish; stigma and veins black.

Length, 2 lines.

Auckland (Colonel Bolton).

This species has three externo-medial veins, and the first branch of the cubital vein is very short, proceeds almost directly to the border, and thus forms an unusually large angle with the second branch. In

this character it differs more than *Actina* from most of the species of *Beris*.

A. OPPOSITA. *Walker, l.c., Supp., p. 13* (1854).

Antennæ tawny, black towards the tips. Palpi pale yellow. Thorax bright bluish-green, with whitish down; scutellum with testaceous spines. Abdomen testaceous; segments black along the hind borders, and with a triangular black spot on each side; tip black. Legs testaceous; tips of the hind femora brown; hind tibiæ brown, with a tawny middle band. Wings limpid; stigma testaceous.

Length, 3 lines.

Auckland (Colonel Bolton).

### Genus—EXAIRETA.

*Schiner.*

Head semi-circular, front broad in both sexes, and small. Antennæ sunk in the head; first and second joints rather long, the second shorter; the third very long, with ten rings, of which the first is the largest; the end rings so close that they are difficult to distinguish; a few bristles on the point, but no style. Proboscis protruding, lips erect. Palpi small, three-jointed (?); penultimate joint thickened at the end; the last short, cylindrical, with a blunt point. Face flat; front with two long streaks; protuberance with three distant, rather elevated, punctures. Thorax slightly curved. Scutellum large, elevated posteriorly, margin with four long spines. Abdomen more than twice the length of the thorax, flat, with seven segments. Genitalia small; male with two small style-like flaps; female with a small, terminal, elevated lamella. Legs slender; posterior femora lengthened, strong, clavate; metatarsi longer than the other members together; posterior tibiæ thick and plump. Pulvilli three, large. Wings naked; mediastinal and subcostal veins only separated in front; cubital vein ends in the rim of the wing, shortly forked; discoidal cell seven-cornered; in front there are four veins ending on the rim of the wing, therefore there are five posterior cells. Poisers large, with a broad head.

E. SPINIGER. *Weidemann, Ausser-europäische zweiflügelige Insecten*, II., p. 618 (*Xylophagus*), (1830). *B. servillei*: *Macquart, Dipt. Exot.*, I., p. 172, pl. 21, f. 1 (1838).

Head hemispherical, depressed in both sexes. Palpi blackish, the last joint forming an angle with the first, salient, perpendicular to the

face, broad; obtusely pointed in the male, slender in the female. Face with white down and hairs. Front black, anteriorly with white hairs; the rest naked. Antennæ testaceous-yellow; base of the first joint, and the last divisions of the third joint black. Eyes naked. Thorax black, with thin white or yellowish down. Scutellum with four long spines, yellow, blackish at the base. Abdomen blackish-blue, with violet reflections; incisions with thin white down. Borer of the female with two small hairy points, black, and two other shorter and broader pieces, under these points; genitalia of the male small. Thighs black, the base white; the posterior pair rather swollen towards the extremity; tibiæ and tarsi of the first and middle pairs pale yellow; the middle blackish below; posterior tibiæ thick, black, the base white; posterior tarsi with the first joint white, not swollen in the male; the others black. Poisers whitish. Wings with the posterior half brownish, clearer towards the tip; stigma brown, a small hyaline patch on the exterior border near the base of the submarginal cell; five posterior cells.

New South Wales (Weidemann); New Zealand ("Reise der 'Novara'").

E. ANALIS. *Nowicki, l.c., p. 11* (1875).

*Female.* Thorax purplish-æneous, humeral callus and scutellum rufous; abdomen rufous, the apical third purplish-æneous; legs rufous, the anterior tarsi brownish-black; wings ochraceous, a sharply defined brown mark through the discoidal cell, getting blackish-brown towards the stigma, which also is brownish; the mark is distinctly paler between the stigma and the second submarginal cell.

Length,  $3\frac{1}{2}$ –4 lines; wing,  $2\frac{3}{4}$ – $3\frac{1}{2}$  lines.

New Zealand (Edwards).

E. STRAZNITZKII. *Nowicki, l.c., p. 14* (1875).

*Male and Female.* Red; thorax ornamented with black lines and spots, with æneous reflections; abdomen from the apex to the posterior limb of the fifth segment æneous-purple; wings pale luteous, in the immature almost hyaline; through the middle of the apex a brownish mark, paler in the first submarginal cell, and continued behind the fifth vein far into the anal cell; stigma blackish-brown, the apex of the marginal cell lutescent.

Length, 4– $4\frac{1}{2}$  lines; wing,  $3\frac{1}{4}$ – $3\frac{1}{2}$  lines.

New Zealand (Edwards).

*Division B.*

Abdomen broad, with five distinct segments.

## Genus—STRATIOMYIA.

*Geoffroy.*

Proboscis very short, compressed. Third joint of the palpi rather swollen; a transverse groove on the lower part of the face. First joint of the antennæ much longer than the second; the third long, almost fusiform, with five divisions; no style. Tibiæ rather swollen in the middle.

*S. FULVICEPS.* *Walker, l.c., Supp., p. 56 (1854).*

*Female.* Black; head tawny. Proboscis and antennæ black. Thorax clothed with gilded hairs, tawny along each side. Pectus tawny. Scutellum testaceous. Abdomen tawny along each side, testaceous beneath. Legs tawny. Wings limpid, tinged with brown towards the base; veins brownish. Halteres testaceous.

Length, 4 lines.

## Genus—ODONTOMYIA.

*Latreille.*

Proboscis slender; third joint of the palpi slightly swollen. Epistome often salient, a transverse groove near the buccal cavity. First joint of the antennæ short; the third almost fusiform, of five divisions, without style. Generally four posterior cells.

*O. DORSALIS.* *Walker, l.c., p. 536 (Stratiomys), (1849); not S. dorsalis, Fabr.*

Head piceous, and clothed with short tawny hairs above, green in front and beneath; eyes piceous; mouth black; antennæ piceous. Thorax black; breast tawny. Scutellum apple-green, unarmed. Abdomen black, broader but not longer than the thorax; sides green, of a deeper hue than that of the scutellum. Legs tawny. Wings whitish; wing-ribs tawny; veins yellow. Poisers tawny, with green knobs.

Length, 3 lines.

Auckland (Colonel Bolton).

*O. CHLORIS.* *Walker, l.c., Supp., p. 57 (Stratiomys), (1854).*

*Female.* Black. Head tawny; vertex and antennæ black. Thorax with a green stripe on each side. Pectus mostly tawny. Scutellum

tawny. Wings limpid, very slightly brownish at the base; veins tawny. Poisers green.

Length, 4 lines.

Auckland (Colonel Bolton).

O. ANGUSTA. *Walker, l.c., Supp., p. 57 (Stratiomys), (1854).*

*Female.* Body black, narrow, clothed beneath with white tomentum. Head tawny, vertex and disc of the face black. Thorax along each side, and pectus, tawny. Legs nearly black; fore tibiæ tawny. Wings greyish, brown towards the base; veins black.

Length,  $3\frac{3}{4}$  lines.

Auckland (Colonel Bolton).

O. AUSTRALIENSIS. *Schiner, l.c., p. 59 (1868).*

*Female.* Black. Thorax scaly, copper-red, sides of the breast yellow (when alive perhaps green); middle part of the breast black, but covered all over with whitish scales. Scutellum bordered with yellow. Lower aspect of abdomen with a broad yellow (green?) lateral stripe, which is narrow on the second and third segments, and does not reach to the fifth segment; last segment yellow; belly apple-green. Head black; front broad, with two transverse-oblique impressions with a furrow between them; below the antennæ there is a double transverse spot divided in the middle by a furrow; lower face reddish-yellow. Antennæ yellow; the third joint with a short pointed style. Legs reddish-yellow; hinder tarsi blackish-brown. Wings hyaline, with rust-coloured veins.

Length, 4 lines.

O. HYPOCHLORA. *Nowicki, l.c., p. 15.*

*Male and Female.* Black; the two first joints of the antennæ black, the third fuscous; face, scutellum (except a basal spot), sides of the abdomen, and all the ventral surface green; a great many spots, and the legs, luteous; wings hyaline, stigma and veins deep fuscous, submarginal cell single, bases of the three next cells slightly smoky; of the veins arising from the discoidal cell, the first behind the base is very thin, the third rudimentary or absent.

*Male.* Green margin of the abdomen broad and unequal, dilated in the posterior portion of each segment. Length, 4 lines; wing,  $3\frac{1}{2}$  lines.

*Female.* Middle of forehead green below, all black above; green margin of the abdomen narrow and sub-equal. Length,  $4\frac{1}{2}$  lines; wing, 4 lines.

New Zealand (Edwards).

O. AMYRIS. *Walker, l.c., p. 535.*

Body black; head tawny beneath, full as broad as the chest, metallic green on each side behind the eyes; eyes bright red; mouth black; feelers piceous, tawny beneath; first and second joints tawny, bristle black; chest clothed with short tawny hairs; breast tawny; scutcheon yellow, armed with two short yellow teeth; abdomen black, rather longer than broad, wider and a little longer than the chest, sides and under-side yellow; legs tawny; wings colourless; wing-ribs, fore-borders, veins, and poisers tawny.

Length,  $3\frac{1}{2}$  lines; wing, 6 lines.

New Holland (Walker); New Zealand (Nowicki).

### Genus—CLITELLARIA.

*Meigen.*

Antennæ nine-jointed; first and second joints equal; flagellum obclavate; style distinct, two-jointed. Scutellum two-spined.

C. ABERRANS. *Schiner, l.c., p. 55 (1868).*

Black; the whole body with a peculiar scale-like shining covering, which however does not alter the colour, and only appears on the abdomen as yellowish-white speckled. Thorax with short white hairs. Spines of the scutellum short and blunt. Head black; lower face above the border of the mouth with a white oblique band of hairs, which is continued in a fine streak on the lower rim of the eye; the naked eyes of the male lie close together, and include nearly the whole of the head. Antennæ long, principally in the third joint, as the two first joints are short; the third indistinctly eight-ringed; without style. Legs black; the front tarsi yellow at the base, the last pair yellow; the second and third joints of the two last pairs totally black. Poisers yellow. Wings hyaline, the edge deep brown; cubital vein straight, consequently the small cross vein of the discoidal is absent. Discoidal cell short and broad, almost trapezoidal, all four veins taking their rise out of the same, two and two near their basis. Anal cell very broad; the postical vein forming a bow, ending in the anal vein.

Length,  $2\frac{1}{2}$  lines.

Auckland.

### Family—SYRPHIDÆ.

Antennæ three-jointed, the last single, and generally with a dorsal style; proboscis with four bristles; three posterior marginal cells, the first closed; a false longitudinal vein dividing the discoidal and first posterior cells.

## Genus—ERISTALIS.

*Latreille.*

Body thick. Face prominent. Antennæ generally inserted under a projection on the front; the third joint almost orbicular; style sometimes naked, sometimes hairy. Eyes hairy. Subcostal cell of the wing generally closed; cubital pediform.

*E. CINGULATUS.* *Fabricius, Syst. Ent. (1775), p. 767. Syst. Antiliatorum, p. 242.*

Head ferruginous, with two vertical black stripes; style of antennæ tomentose. Thorax black, covered with ferruginous tomentum. Abdomen black; a white band, interrupted in the middle at the base of the first segment; the second and third with four, and the fourth with two, white spots. Legs black, soles of the feet ferruginous; femora thickened behind; tibiæ incurved.

New Zealand (Sir J. Banks).

The shape of the legs puts this species into the next genus.

## Genus—MALLOTA.

*Meigen.*

Body thick, generally hairy. Face prominent. Front broad in both sexes. Antennæ inserted under a projection of the front; third joint broader than long. Posterior tibiæ incurved. Wings open, cubital vein sinuous.

*M. ANTIPODUS.* *Schiner, l.c., p. 359 (Helophilus), (1868).*

*Female.* Black. Thorax with four whitish-grey longitudinal streaks, the outer close on the margin; between the inner a small grey line. Scutellum yellow-red. Abdomen black, the second segment with broad gold-yellow lateral patches; the third with pale yellow small patches; the remainder of the segments metallic on the hinder half. Head black; lower face yellow; projection yellow; cheeks black; front shining-black, closely yellow-dusted behind; crown deep black. Antennæ black, the third joint broader than long, rounded. Legs shining-black, hinder parts of thighs thickened; points of fore and middle thighs, &c., lively reddish-yellow. Wings tinged with very pale brownish-yellow.

Length,  $5\frac{1}{2}$  lines.

*M. LATIFRONS.* *Schiner, l.c., p. 359 (Helophilus), (1868).*

Thorax black, with five grey longitudinal streaks; the outer one broad, and joined on the suture to the inner one; sides of breast grey,



with short and close blackish hair. Scutellum rust-red, blackish on the base. Abdomen metallic-green; blue or violet at the base with a semicircular greyish spot; each segment is pale blackish in the centre and on the margin, so that the shining metallic parts are distinct. Head black, lower face rather greyish-dusted, prominence shining blackish-brown. Front of male rather broad, yellow above the antennæ, and on the sides black dusted with white; front of female broad. Antennæ rust-red, their bases blackish; the third joint round and large; style black. Proboscis brown. Legs black; the point of the middle thighs, base of the tibiæ, &c., rust-yellow; thighs with yellow hair on the lower side; the tarsi with red tomentum. Wings tinged brownish, scales dirty rust-yellow.

Length,  $4\frac{1}{2}$ –6 lines.

### Genus—HELOPHILUS.

*Meigen.*

Face prominent. Antennæ inserted, and a projection on the front; third joint almost orbicular. Eyes separated in both sexes. Abdomen depressed. Thighs thickened; shanks incurved, generally prolonged by a point. Cubital cell pediform.\*

H. *TRILINEATUS*. *Fabricius, Syst. Ent.* (1775), *p.* 766. *Voy.* "Ereb." and "Terror," *Insects*, *pl.* 7, *f.* 19.

Head yellow; margins of the lips, antennæ, and vertex black; style of antennæ tomentose. Thorax tomentose, pale, with three broad black lines. Abdomen black, with an interrupted ferruginous band at the base. Legs ferruginous; the four anterior femora black at the base; the hinder pair all black, one-toothed; posterior tibiæ incurved, ferruginous, the base black.

New Zealand (Sir J. Banks, Dr. Sinclair, Earl).

H. *INEPTUS*. *Walker, l.c.*, *p.* 608 (1849).

Head yellow, black on the crown and about the base of the antennæ; eyes pitchy, all the facets very small; mouth and antennæ black; style naked. Thorax dark brown, clothed with black hairs, adorned with two hoary stripes on the back, and with a yellow stripe on each side, having a brassy hue towards the hinder part, especially on the scutellum, whose hind border is tawny. Abdomen brassy, oval, nearly flat, a little broader and shorter than the thorax, clothed with

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\* Nowicki mentions a *Helophilus selandicus* (Fabr.) from New Zealand. I can find no description of it.

tawny hairs, adorned with a large tawny spot on each side of the base. Legs pitchy, clothed with tawny hairs; shanks tawny towards the base; claws and foot-cushions tawny; tip of claws black; hind thighs slightly thickened. Wings slightly grey; wing-ribs pitchy; veins black.

Length, 5 lines.

New Zealand (Dr. Sinclair).

H. HOCHSTETTERI. *Nowicki, l.c., p. 23 (1875).*

*Male and Female.* Black, clouded; abdomen shining-blue; last joint of the antennæ, frontal lunula, scutellum, and tubercle under the wing yolk-yellow; wings cinereo-hyaline; the stigma fuscous.

Length, 4–4½ lines; wing, 4–4¼ lines.

New Zealand (Edwards).

## Genus—SYRITTA.

*St. Fargeau et Serville.*

Face keeled, epistome prominent. Second joint of the antennæ naked, the third orbicular; style rather short. Abdomen elongated, narrower than the thorax. Posterior femora short, strongly inflated, denticulated below; tibiæ incurved; first joint of the tarsi swollen. First posterior cell rounded at the base.

S. OCEANICA. *Macquart, Dipt. Exot., Supp. 5, p. 112 (1854).*

*Female.* Palpi small, black. Face rather concave, with silvery down, and a black band in the middle. Anterior portion of the front with white down, the rest shining-black, prolonged into a point in front. The two first joints of the antennæ brownish-testaceous; the third black, brown below. Thorax shining-black, the sides with white down. Abdomen dull black, the second segment with two yellow spots, shining, and reaching the anterior border; the third and fourth with interrupted yellow incisions; the third with two shining spots, the fourth entirely shining. Anterior and intermediate femora black, the extremity fulvous; the posterior pair entirely black; anterior and intermediate tibiæ blackish, the base fulvous; the posterior pair black, with the knees and a ring in the middle fulvous; tarsi black, the first joint fulvous. Poisers fulvous. Wings clear; veins normal.

Length, 3 lines.

Tahiti and New Zealand (M. Bigot).

## Genus—MILESIA.

*Latreille.*

Head much depressed. Face often without any prominence. Antennæ inserted under a projection of the front; the third joint orbicular. Posterior femora rather bent and keeled. First posterior cell with the base oblique.

M. BILINEATA. *Walker, l.c., p. 566 (1849).*

Body black. Head as broad as the thorax, covered behind and in front with pale tawny down. Mouth and antennæ black. Eyes black; facets on the fore-part of the crown larger than those elsewhere. Thorax adorned with two pale tawny stripes, its sides and the breast also pale tawny; breast covered with hoary bloom. Scutellum clothed with long tawny hairs. Abdomen long-obconical, longer and a little narrower than the thorax, clothed beneath with tawny hairs. Legs black, clothed with short tawny hairs; hind thighs rather thick, toothed beneath; claws and foot-cushions yellow; tips of claws black. Wings dark grey; wing-ribs and veins black. Poisers tawny.

Length, 7 lines.

Wellington (Mr. Earl).

## Genus—SYRPHUS.

*Fabricius.*

Face prominent. Palpi and maxillary bristles more or less elongated. Antennæ inserted under a projection of the front, rather distant at the base; third joint oval; the style slightly pubescent. Eyes generally naked.

S. ORTAS. *Walker, l.c., p. 585 (1849).*

Head blue, clothed with black hairs, covered in front with pale-yellow down; mouth black; feelers piceous, ferruginous at the base; bristles black. Thorax brassy-green, clothed with tawny hairs; scutellum tawny; breast hoary, clothed with white hairs. Abdomen deep black, thinly clothed with black and whitish hairs, adorned with four yellow bands, which are interrupted along the mid-back, especially towards the tip. Legs tawny, clothed with whitish hairs; feet and hind legs pitchy. Wings colourless; wing-ribs and poisers tawny; veins black.

Length of the body,  $4\frac{1}{2}$  lines.

New Zealand (Dr. Sinclair).

S. *ROPALUS*. *Walker, l.c., p. 593 (1849).*

Head tawny, coppery on the crown; eyes red; feelers tawny; bristles black. Thorax coppery; sides tawny; scutellum orange; breast hoary. Abdomen black, narrow, linear, orange on each side of the base, adorned with four broad orange bands, of which the first and fourth are interrupted along the mid-back. Legs tawny. Wings colourless; wing-ribs and poisers tawny; veins black, tawny towards the base.

Length of the body, 4 lines.

New Zealand (Dr. Sinclair).

S. *NOVÆ-ZEALANDIÆ*. *Macquart, l.c., Supp. v., p. 115 (1854).*

*Female*. Face covered with white down with reddish reflections; prominence shining-black. Front shining-black, a little white down on the sides in front. Antennæ black. Thorax green-bronze, sides with whitish down and hairs. Scutellum brownish-yellow. Abdomen but little shining, with dull reflections; second, third, and fourth segments with a narrow interrupted yellow band, reaching the exterior border; the fifth shining-black; belly shining-black. Legs black; fore tibiæ brown. Poisers brown. Wings greyish; veins normal.

Polynesia and New Zealand (M. Bigot).

S. *RECTUS*. *Nowicki, l.c., p. 24 (1875).*

*Female*. Antennæ black; the whole of the front and a broad facial vitta æneous-black. Thorax æneous-green, passing into black æneous; abdomen intense black, the second, third, and fourth segments ornamented with a sub-basal fascia broadly interrupted, yellow dusted with white; the anterior angle of the fifth segment yellow lightly dusted with white. Anterior legs testaceous, the whole of the tarsi and the base of the femora black; posterior legs all black. Wings cinereo-hyaline; stigma fuscous.

Length,  $4\frac{1}{2}$  lines; wing,  $4\frac{1}{2}$  lines.

New Zealand (Edwards).

## Genus—PLESIA.

*Macquart.*

Face rather prominent, with a projection. Third joint of the antennæ oval; style naked. Eyes naked. Abdomen of the same breadth as the thorax; the sides straight. Legs simple; posterior tibiæ arched, first joint of the posterior tarsi slightly swollen. First posterior cell closed, rather distant from the posterior border, appendiculate or elbowed; the second cross-vein almost perpendicular.

P. FASCIATA. *Macquart, l.c., Supp. 4, p. 157, tab. 14, f. 15 (1850).*

*Male.* Face shining-black, with green reflections; the projection but little salient. Front linear, in front black with green reflections. Antennæ black. Thorax and scutellum deep green. Abdomen dull black; the second and third segments with a fulvous-yellow band extending from the anterior nearly to the posterior border, spreading to the sides, but interrupted in the middle, where it is a little rounded; fourth and fifth with the exterior border yellow; the fifth has the anterior border shining. Legs yellow; the posterior pair black, the thighs yellow on the anterior half, the shanks with a yellow ring in the middle. Poisers yellow. Wings clear; the stigma yellowish.

Length, 2 lines.

Akaroa.

#### Family—MUSCIDÆ.

Proboscis distinct, with two bristles; antennæ three-jointed, the last simple and with a dorsal style; three posterior marginal cells.

#### SECTION—MUSCIDÆ-CALYPTERÆ.

Style of the antennæ generally two- or three-jointed; first posterior marginal cell closed, or slightly open; scales well developed.

#### Sub-Family—TACHINARIÆ.

Style of the antennæ naked or tomentose. Abdomen oval or conical, furnished with bristles; first segment short.\*

#### Genus—HYSTRICIA.

##### *Macquart.*

Body broad. Head rather small; face oblique, bordered with bristles above and below, naked in the middle; epistome salient; front narrowing posteriorly in the male. Antennæ obliquely inclined, not reaching the epistome; the second joint rather elongated, sub-conical; the third double the second, straight above and below, a little rounded at the extremity; the second joint of the style elongated. Eyes hairy. Thorax broader than the head; scutellum provided with strong bristles. Abdomen broader than the thorax, almost round, provided with strong bristles. First posterior cell slightly open a little in advance of the end of the exterior margin.

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\* Nowicki mentions a *Tachina lupina* (Swed.) from New Zealand. I can find no description of it.

H. ORIENTALIS. *Schiner, l.c., p. 331 (1868).*

*Male.* Thorax brown; dusted with brownish-yellow, and with four longitudinal black streaks. Scutellum and abdomen dirty rust-yellow. Bristles strong, two on the middle and a row on the hind margin of each of the segments; below close yellow hair with strong black bristles; the hindmost are short and brush-like. On the sides of the abdomen, in the centre of the fourth segment, there is a black flap-like organ, covered with short but strong bristles; centre of the belly with pointed bristles, the sides bald. Head yellow, front brownish-red, shining-grey on the sides. Antennæ black, the third joint the same width, but longer than the second, blunt; the penultimate joint of the style elongated; palpi yellow; whiskers yellow. Legs rust-yellow; thighs above and on the base below, and tarsi, blackish-brown. Wings almost hyaline; all the veins, the base, and the fore-rim with a rust-brown shade.

Length,  $6\frac{1}{2}$  lines.

H. ZELICA. *Walker, l.c., p. 711 (Tachina), (1849).*

Body clothed with black hairs and bristles. Head tawny, silky, clothed beneath with pale-yellow hairs, darker on the crown, and having there a broad dark ferruginous stripe, which widens from the ocelli to the base of the antennæ; sides of the face fringed with bristles for one-fourth from the length of the base; epistoma somewhat prominent; eyes pitchy, hairy, red along the borders; proboscis black, clothed at the tip with tawny hairs; palpi tawny, long, beset with black bristles. Antennæ pitchy, shorter than the face, second joint ferruginous towards the tip; third joint black, nearly linear, much more than twice the length of the second, hardly concave above, slightly convex beneath, rounded at the tip; style much longer than the third joint; its second joint rather short, but longer than the first; third joint stout, tapering from the base to the tip. Thorax dark brown, adorned with five paler indistinct stripes; sides and scutellum ferruginous, breast pitchy. Abdomen bright tawny, clothed with tawny hairs and black bristles; the latter are chiefly on the hind borders of the segments, and towards the tip; a black band on the hind border of each segment. Legs ferruginous, clothed with black hairs and bristles; claws and foot-cushions pale tawny, tips of the claws black. Wings dark grey, tawny at the base, brown along the borders of the veins, and especially of the cross-veins; tip cross-vein forming a slightly acute angle with the fourth longitudinal vein, much curved near the base, straight from thence to the tip, joining the border at some distance above the tip of the wing; lower cross-

vein with two slight curves, the lower inward, the other outward. Scales yellow, with dark borders.

Length, 7 lines.

New Zealand (Dr. Sinclair).

H. PACHYPROCTA. *Nowicki, l.c., p. 25 (1875).*

*Male.* Head dusted-pale; antennæ and frontal stripe black; palpi luteous; thorax dusted-pale, cloudy; dorsal stripes black; scutellum luteous; abdomen ochraceous, ornamented with a broad black vitta which is serrated on each side, and much dilated behind, so that the apex of the abdomen is altogether black; wings rather fuscous; setæ all over the body black; hairs generally pale luteous, the others black.

Length, 5-6 lines; wing,  $5\frac{1}{2}$  lines.

New Zealand (Edwards).

Genus—DEMOTICUS.

*Macquart.*

Body oblong. Head hemispherical. Face inclined, naked, a little convex; epistome a little prominent. Front prominent, broad (male and female). Antennæ inclined; second joint a little elongated; third widening towards the extremity, twice as long as the second; style three-jointed, first short, second a little elongated, third swollen to the third fourth. Eyes naked. Abdomen elliptical; some setæ at the middle of the second and third segments. Feet with small hooks and pads. Wings: first posterior cell projecting nearly to the extremity.

D. AUSTRALIENSIS. *Schiner, l.c., p. 325 (1868).*

*Male.* Thorax brown, closely dusted with white on the sides; the middle with three darkish long streaks, passing behind into whitish-yellow dusting; shoulders, a patch at the root of the wings, sides of the breast, and scutellum, rust-yellow dusted with white. Abdomen rust-yellow with an indistinct darkish back streak, with whitish-yellow opaline spots. Macrochettes only on the rim of the segments, the last with many bristles. The hair-covering of the abdomen scattered, and the bristles black. Head rust-yellow, almost quadrangular; cheeks broad, white, shining with black-grey, and rust-red reflections; front bristles less numerous; front streak broad, red. Antennæ bent down, brown; second joint lengthened, the third  $2\frac{1}{2}$  times as long as the second; bristles thick, second joint long.

Proboscis brown, sucker small; palpi yellow, dusted white. Some spots on the inner side of the thighs not dusted. Wings hyaline, light at the base, costa rust-yellow; cross-veins tinged with rust-yellow, the hinder much like an S. Scales large, white.

Length, 5 lines.

### Genus—MICROPALPUS.

#### *Macquart.*

Body broad. Palpi short, slender, and terminated by a bristle. Face naked; epistome salient. Antennæ inclined, descending almost to the epistome; second joint elongated, but shorter than the third; this last prismatic, truncated at the extremity; second division of the style elongated. Eyes hairy. Abdomen oval; two bristles in the middle of the second and third segments. First posterior cell reaching the border of the wing before the tip.

M. BREVIGASTER. *Macquart, l.c., Supp. 1, p. 149 (1846).*

*Male.* Palpi fulvous, furnished with many hairs; face very prominent, bordered with some yellowish-fulvous hairs, with thin whitish down; front with a fulvous band, and the sides black, with white down. Two first joints of the antennæ fulvous; the third broad, black above and at the tip, fulvous below; second joint of the style elongated. Eyes hairy. Thorax bluish-black, with thin white down and black lines; sides with thick yellow down. Abdomen short, rounded, and a little speckled, with greenish-yellow tomentum; sides of the two first segments yellow; two bristles on the middle of the second; belly and anus yellow. The four last joints of the tarsi black; rest of the legs red. Scales yellowish. Wings clear.

Length, 3 lines.

Tasmania (M. Bigot); New Zealand ("Reise der 'Novara'").

### Genus—CHLOROGASTER.

#### *Macquart.*

Body broad. Face perpendicular, bordered at the base; epistome not projecting; front rather narrowed in the male; sides covered with bristles. Antennæ hidden, slightly elongated, not reaching the epistome; the second joint elongated; the third prismatic, one and a half times as long as the second; style inflated for a third of its length. Eyes naked, oval. Abdomen oval; bristles in the middle of the second and third segments. First posterior cell reaching the border of the wing a little before the tip.



*C. RUFICEPS.* *Schiner, l.c., p. 323 (1868).*

Thorax black, dusted with white, and with four longitudinal black streaks, the middle pair diverging behind. Scutellum similar, the point rust-yellow; sides of the breast grey. Abdomen of male olive-green, rather shining, with a few opaline spots, and with rather distant hairs; of the female black dusted with slate-blue. Bristles only on the margins of the segments, the last segment with many bristles. Head rust-yellow, dusted with ochre; front broad, with three close rows of short weak bristles, pale yellowish-red. Antennæ yellowish-red; the second joint with black bristles above; the third is broad, blunt, and three times the length of the second. Palpi reddish-yellow. Lips the same colour; proboscis brown. Legs bright yellowish-red; tarsi brown; thighs and tibiæ with close black bristles. Wings hyaline; lower cross-vein near the middle of the discoidal cell. Scales large, white.

Length, 3 lines.

Genus—*NEMORÆA*.*Macquart.*

Body broad. Palpi slightly salient. Face generally naked; epistome slightly or not salient. Front narrow posteriorly in the male. Antennæ almost hidden, rather short, not reaching the epistome; second joint elongated, the third more than double the second; first joint of the style short. Eyes hairy. Abdomen oval, often with two bristles in the middle of the second and third segments. First posterior cell reaching the border of the wing a little before the tip; discoidal vein arched after the elbow; the second transverse oblique, slightly arched.

*N. ORASUS.* *Walker, l.c., p. 741 (Tachina), (1849).*

Body black, clothed with black hairs and bristles. Head covered with dull-tawny bloom, clothed behind and beneath with black hairs, pitchy and furrowed between the ocelli and the base of the antennæ; adorned with a large ferruginous spot on each side of the face; epistome not prominent, no bristles on the sides of the face. Eyes pitchy, hairy. Proboscis black, slender, long, clothed at the tip with a few tawny hairs. Palpi pale pitch-colour, long, slender, beset with black bristles. Antennæ hardly three-fourths the length of the face; first and second joints dark ferruginous; third joint black, slightly concave above, equally convex below, rounded at the tip, about thrice the length of the second joint; style black, the second joint rather

more than twice the length of the first; third joint much longer than the third of the antennæ, stout, though tapering for full one-third of its length, slender from thence to the tip. Thorax covered with a dark-grey bloom, which is interrupted by three indistinct black stripes, hoary on each side. Scutellum ferruginous, armed with some long black spines. Abdomen nearly oval, not longer than the thorax, tessellated or adorned with hoary reflections, which are interrupted by four rows of black intervals; the latter are most conspicuous on each side. Legs black, slender, rather long, clothed with black hairs and bristles; foot-cushions small, pale tawny. Wings grey, brown along the borders of the veins; wing-ribs dark tawny; veins black, tawny at the base; tip cross-vein forming an angle with the fourth longitudinal vein, which projects a little beyond, curved inward near the base, slightly waving from thence to the tip, joining the border a little above the tip of the wing. Scales tawny, with dark borders.

Length, 4 lines.

New Zealand (Dr. Sinclair).

### Genus—EURIGASTER.

#### *Macquart.*

Body broad. Face oblique, generally naked; epistome scarcely salient. Front broad in both sexes. Antennæ reaching the epistome, the two first joints equally short; the third at least four times the length of the second. Eyes often hairy. Abdomen oval, generally with bristles in the middle of the segments. First posterior cell reaching the margin of the wing near the point; discoidal vein generally straight after the elbow, sometimes incomplete; no spine on the exterior margin.

E. FEREDAYI, *sp. nov.*

Thorax dark brown, with two indistinct longitudinal black lines. Scutellum and posterior corners of mesonotum light brown. Both thorax and scutellum with long black bristles. First segment of abdomen brown; the three last bright metallic-blue, with black hairs and bristles. Head dark brown, with black bristles; lower face grey; epistome yellow. Antennæ, palpi, and proboscis brown. Legs brown, with black bristles. Wings hyaline.

Length,  $3\frac{1}{2}$  lines.

Dunedin.

This species and the next are parasitic in the larva of the basket-moth (*Liothula omnivora*, Fereday).

**E. MARGINATUS, *sp. nov.***

Metallic-blue; scutellum bordered with fulvous. Thorax with two indistinct longitudinal black lines. Legs black; middle of tibiæ of the two hind pairs rufous. Head and wings as in the last.

Length,  $3\frac{3}{4}$  lines.

Dunedin.

**E. CLATHRATUS. *Nowicki, l.c., p. 27 (1875).***

*Male.* Black; head and legs the same colour; palpi luteous; second, third, and fourth segments of the abdomen ornamented with a large red spot on each side, and (except the posterior margin) dusted white, sprinkled with shining tessellations; tegulæ dirty-whitish; wings cinereous.

Length, 5 lines; wing,  $4\frac{1}{4}$  lines.

New Zealand (Edwards).

**Genus—MILTOGRAMMA.**

*Meigen.*

Body narrow. Head thick. Peristome bordered with little bristles. Face almost naked, concave; epistome not salient. Front salient, with short bristles. Antennæ short, scarcely half the length of the face, hidden in the cavity of the face; the third joint generally double the second; style short, sometimes tomentose. Abdomen cylindrical or conical, generally without bristles, even on the margins of the segments. First posterior cell almost closed, reaching the border of the wing before the tip; discoidal vein curved after the elbow; no point on the exterior border.

**M. (?) MESTOR. *Walker, l.c., p. 741 (1849).***

Head ferruginous, brighter on the face, along whose sides there are no bristles; a pitchy stripe between the ocelli and the base of the antennæ; underside clothed with white hairs; epistome not prominent; proboscis black, clothed at the tip with short tawny hairs; eyes red with a brassy tinge, not hairy. Antennæ ferruginous, very short, half the length of the face; third joint nearly elliptical, longer than the second, but not much deeper; style black, tapering, stout near the base, very slender towards the tip, more than twice the length of the third joint of the antennæ; its first and second joints of moderate and equal lengths. Thorax and breast dark grey; thorax clothed with black hairs and bristles; sides slightly ferruginous. Scutellum ferruginous. Abdomen tawny, rather long and narrow, nearly cylindrical,

tapering towards the tip, thinly beset with short black bristles, armed on the sides of the hind borders of the segments and at the tip with black spines; black at the base, and having an interrupted black stripe from the middle to the tip of the back. Legs tawny, clothed with black hairs, beset with black bristles; feet black; foot-cushions tawny. Wings slightly grey; wing-ribs tawny; veins pitchy; tip cross-vein forming a right angle with the fourth longitudinal vein, which sends forth a short stump beyond it, very slightly curved along the whole length, joining the border at some distance above the tip of the wing; lower cross-vein with two curves, the lower inward and very distinct, the other outward and very slight. Scales pale tawny.

Length,  $5\frac{1}{2}$  lines.

Perhaps this species belongs to *Clytia*.

New Zealand (Dr. Sinclair).

### Genus—MELANOPHORA.

*Meigen.*

Body generally small, narrow. Face generally naked, more or less elevated; epistome not projecting. Antennæ of various lengths; style tomentose or thinly haired. Eyes generally naked. Abdomen cylindrical; no bristles in the middle of the segments. First posterior cell open or closed, often petiolate; the exterior border generally furnished with a point.

M. (?) *SOSILUS*. *Walker, l.c., p. 796 (Tachina), (1849).*

Body black, clothed with black hairs and bristles. Eyes red, not hairy. Proboscis, palpi, and antennæ black. Abdomen oval, hardly longer than the thorax. Legs black, clothed with black hairs and bristles; foot-cushions dark tawny. Wings white; wing-ribs and veins yellow; tip cross-vein forming a slightly obtuse angle with the fourth longitudinal vein, very slightly curved outward, joining the third longitudinal vein at some distance from the tip of the latter; lower cross-vein very slightly curved inward, nearly straight at the base and at the tip.

Length,  $1\frac{1}{2}$  lines.

### Sub-Family—DEXIARÆ.

Style of antennæ plumose. Face generally keeled. Legs elongated. Abdomen generally cylindrical; sometimes two bristles in the middle of the segments.

## Genus—RUTILIA.

*Rob. Desvoidy.*

Body broad. Antennæ short, not reaching the epistome. Face swollen, the protuberance excavated in the middle; epistome salient. Front narrow in the male, broad in the female. Scutellum large. Third segment of the abdomen bordered posteriorly with bristles which are short in the male, strong in the female; the fourth sloped in the middle of the posterior border, covered with hairs in the male, with hairs and bristles in the female. First posterior cell slightly open, near the tip of the exterior border of the wing.

R. LEUCOSTICA. *Schiner, l.c., p. 319 (1868).*

Thorax metallic blue-green, with four black-blue longitudinal streaks, and snow-white spots; two larger ones on the shoulders; between these two there are broader streaks which enlarge towards the suture; behind the suture four round spots close together; sides of the breast black, passing into rust-brown below, with two large round snow-white spots. Scutellum rust-yellow with metallic-green reflections. Abdomen velvet-black; on the second segment a beautiful large green-and-red transverse band, interrupted in the middle; on the third and fourth segments two spots of the same colour, separated by a back streak; second segment white below, passing up on the sides; the third with two white spots; the fourth white on the sides. Bristles only on the second and fourth segments. Head silky, golden yellow; bristles on the mouth continued to the middle. First joint of the antennæ brown; second rust-yellow. Front with a broad velvet-black middle streak. Occiput black on the top, the sides white. Proboscis pitch-brown; palpi long, filiform, rust-yellow. Legs black with rust-yellow knees. Wings hyaline, a yellowish-brown stain on the veins of the fore-rim; on the base a rust-brown spot. Veins normal.

Length, 7 lines.

R. PELLUCEUS. *Macquart, l.c., Supp. 1, p. 177, pl. 16, f. 4 (1846).*

*Male.* Proboscis black. Face fulvous, cheeks black, with grey down. Front black, the sides with grey down. Antennæ black. Thorax black with thin white down, the posterior border brownish-testaceous. Scutellum testaceous. Abdomen black, with thin white down; each segment transparent, testaceous on the sides; belly testaceous with a black band. Scales yellowish. Wings clear; a brown patch near the base.

Length, 6 lines.

Australia (Macquart); New Zealand ("Reise der 'Novara'").

## Genus—BOTHROPHORA.

*Schiner.*

Head hemispherical; front a little protruding; lower face deeply hollowed out; keel small and high, like a partition; rim round the mouth strong, drawn forward; cheeks broad and almost straight below; mouth large; proboscis with bristles. Antennæ bent down; first joint short; the second a little lengthened; the third rather more than twice the second, rounded in front. Style naked. Thorax flat, hollowed, and large. Scutellum semi-circular. Abdomen very broad and plump, four segments; genitalia hidden. Legs moderate. Wings when at rest rather extended; the first posterior cell reaches the exterior border before the tip of the wing. Discoidal vein angularly bent in front, then curved outwards; diagonal vein S-like behind. Scales large.

B. ZELEBORI. *Schiner, l.c., p. 317 (1868).*

Blackish-brown. Thorax dusted with greyish-yellow; with four velvet-black longitudinal streaks; the middle pair short below and joined to the shoulder spots in the form of a horse-shoe; sides of breast with reddish fox-like hairs; a row of black bristles downward from the root of the wing. Scutellum dark rust-yellow. Abdomen rust-yellow, with narrow oblique velvet-black bands on each side and a dark line on the back, close to which the ground colour is whitish; the whole surface with fox-like hairs; the second and fourth segments with bristles which are black at the base and reddish at the point. Head yellow; lower face shining brass-yellow, with blackish-brown reflections; front and sides blackish, with grey reflections; a broad black streak in the middle, which is deeply divided below. Occiput grey; cheeks and middle breast with reddish hairs. Legs pale pitch-brown; the thighs and fore part of tibiæ and tarsi darkened; fore tarsi with gold-brown tomentum inside; thighs with matted hairs and bristles; the middle of posterior tibiæ sparsely bristled outside; hair golden yellow; bristles black. Wings hyaline, brownish at the base and front margin; longitudinal veins with a dark shade; small cross-vein, curved part of discoidal vein, and hinder cross-vein with a broad rust-brown margin.

Length,  $8\frac{1}{2}$  lines; breadth of abdomen, 4 lines.

## Genus—MICROTROPESA.

*Macquart.*

Body broad. Head hemispherical, thick; proboscis with thick lips; palpi arched, enlarged at the extremity. Face broad, ciliated to

near the middle; epistome salient; keel small, occupying only the upper part of the face. Front broad, a little narrowed above; lateral bristles small, in two rows which descend and curve round to the base of the third joint of the antennæ; two rather stronger bristles near the border of the eyes. Antennæ approximated, hidden; the first joint short; the second rather longer; third one and a half times as long as the second, rounded at the end; style naked. Eyes naked. Thorax short; scutellum broad. Abdomen rounded. Legs medium. The second, third, and fourth joints of the anterior tarsi dilated in the female. Wings narrow; first posterior cell reaching the exterior border before the tip of the wing; discoidal vein straight from the elbow; first cross vein oblique; the second situated at three-fourths of the distance from the first to the elbow.

*M. SINUATA.* *Donovan. Macquart, l.c., Supp. 1, p. 186, pl. 16, f. 6.*

Black. Palpi, face, front, and antennæ yellow-orange; frontal band sometimes black. Thorax with four anterior patches of white down; sides with white down and yellow hairs. Scutellum brownish-yellow. Third and fourth segments of the abdomen with a whitish patch in the shape of a white vase; no bristles on the posterior margin of the second segment; those of the fourth and fifth interrupted by a whitish patch; belly whitish, with black transverse patches, and lateral patches contiguous to the black of the back. Legs fulvous; the four last joints of the tarsi brown; the anteriors dilated transversely. Scales yellowish-white. Wings with the anterior half orange, the posterior half brown.

Tasmania (Macquart); New Zealand ("Reise der 'Novara'").

### Genus—AMENIA.

#### *Rob. Desvoidy.*

Body broad. Head thick. Palpi a little swollen. Face projecting, terminating in a point (profile view) bordered with bristles at its base; a plane keel a little excavated longitudinally. Cheeks descending a little, almost naked. Front convex, a little narrowed in the male, bordered by small bristles. Antennæ separated by the base of the keel, only half the length of the face; the two first joints short; the third four times as long as the second, its sides straight; rounded at the end. Style plumose. Eyes separated in the male. Thorax as broad as the head, with short hairs. Scutellum broad. Abdomen as broad as the thorax, short; two small bristles on the posterior margin of the second segment. Legs normal. Exterior margin of the wings arched; discoidal vein straight from the elbow.

- A. LEONINA. *Fabricius, Syst. Ent.* (1775), p. 776; *Syst. Antil.*, p. 290. *Macquart, l.c.*, Vol. II., p. 117, pl. 14, f. 5.

Greenish-bronze. Thorax spotted with silvery. Abdomen shining-blue; the second and fourth segments each with two silvery spots.

Length, 6 lines.

Australia, New Zealand ("Reise der 'Novara'").

- A. PARVA. *Schiner, l.c.*, p. 316 (1868).

The under surface hairy. Thorax with two white longitudinal bands, distinct at the commencement. Front of male much contracted behind, so that the eyes almost touch. The front bristles weak, but long and dense. The rest like *A. leonina*.

Length, 2-2½ lines.

No locality is given for this species, but it would seem that New Zealand was intended.

## Genus—DEXIA.

*Meigen.*

Body cylindrical. Proboscis short and membranous. Abdomen cylindro-conical; segments generally with two bristles in the middle.

- D. RUBRICARINATA. *Macquart, l.c., Supp.* 1, p. 187, pl. 16, f. 8 (1846).

Black. Palpi not salient. Face blackish, with thin whitish down; keel testaceous, large, with a groove; front black; sides with whitish down. Thorax with thin whitish down and black lines. Abdomen lengthened, irregularly marked with white down. Legs black. Scales yellow. Wings clear, the small cross-vein bordered with brown; a point on the exterior border.

Length, 5½ lines.

Tasmania (Macquart); New Zealand ("Reise der 'Novara'").

## Sub-Family—MUSCINÆ.

Style of antennæ plumose to the extremity. Abdomen short, without bristles. Legs moderate.

## Genus—STOMOXYS.

*Geoffroy.*

Proboscis solid, slender, elongated; the terminal lips small. Palpi not passing the epistome. Front broad in the male. Third joint



of the antennæ three times as long as the second; style plumose above. First posterior cell only slightly narrowed at the end. Discoidal vein convex.

S. *ÆNOS*. *Walker, l.c., p. 1160 (1849).*

Body thinly clothed with black hairs and bristles. Head dark brown, adorned in front with silvery lustre; epistome slightly prominent; sides of the face beset with bristles at the base; eyes pitchy, fore-part nearly flat, its facets rather larger than those elsewhere; proboscis black, smooth, shining; palpi tawny. Antennæ pitchy, shorter than the face; third joint flat above, very slightly convex beneath, obliquely truncated at the tip, about twice the length of the second joint; style black, about twice the length of the third joint, thinly feathered, stout for more than half its length. Thorax black, adorned with indistinct tawny stripes, and on each side with a tawny patch; breast grey. Abdomen black, tinged with yellowish-brown; two tawny stripes on the under-side. Legs black, clothed with black hairs and bristles; knees and foot-cushions tawny. Wings colourless; wing-ribs pitchy; veins black, tawny at the base; tip cross-vein united by a very slight curve to the fourth longitudinal vein, slightly curved inward from thence to the tip, joining the border at a short distance below the tip of the wing; lower cross-vein nearly straight, but with a slight inward inclination in the middle part of its course. Scales yellowish-white, with pale-yellow borders.

Length, 2 lines.

New Zealand (Dr. Sinclair).

## Genus—IDIA.

*Meigen.*

Proboscis rather elongated. Epistome projecting, rostriform. Palpi dilated. Antennæ short, only half the length of the face; the third joint three times the length of the second; style plumose above only. First posterior cell generally slightly open at the extremity of the wing.

I. *MURINA*. *Schiner, l.c., p. 309 (1868).*

*Male.* Thorax and scutellum dark coppery, with numerous small punctæ; sides of the breast pale yellow, punctate; middle of the breast shining-black, partially hoary. Abdomen black; the three first segments transparent pale-yellow; anal segment metallic-green. Head black; eyes close together; projection of lower face brownish-red; cheeks and occiput below pale yellow, and whitish hairs. Antennæ

yellow-brown. Palpi yellow, the point brown. Proboscis and legs black. Basal half of the tibiæ, and tarsi from basis, yellow. Wings hyaline; on the fore-rim a brownish washed-out spot. Poisers whitish.

*Female.* Sides of breast whitish-grey. Abdomen metallic-black; yellow on the first and second segments; grey side-patches; belly whitish-grey. Front broad; a small middle streak, forked backwards. Antennæ and palpi dark brown. Legs with a large brownish-yellow patch on the thighs and tibiæ.

Length, 3–3½ lines.

### Genus—CALLIPHORA.

#### *Macquart.*

Face bordered with hairs; epistome a little projecting. Antennæ nearly reaching the epistome; the third joint four times as long as the second; style plumose. Abdomen hemispherical. First posterior cell reaching the border of the wing a little before the extremity; discoidal nerve generally strongly arched after the elbow.

C. DASYOPHTHALMA. *Macquart, l.c., Vol. II., p. 130, pl. 16, f. 2* (1842).

*Female.* Proboscis black; palpi fulvous. Face blackish-brown, with thin grey down; cheeks brown, with grey down and black hairs; an intermediate band of deep brown, with longitudinal striæ. Antennæ black with thin grey down. Eyes hairy, with yellow hairs. Thorax bluish-black, with indistinct longitudinal bands of white reflections; the sides with a little elongated longitudinal fulvous patch; scutellum blackish-brown. Abdomen brilliant blue, with violet reflections; no down. Legs black; a little fulvous at the extremities of the thighs, and at the bases of the anterior and intermediate tibiæ. Scales blackish, bordered with little whitish hairs. Wings greyish; base and exterior border slightly yellowish; a fulvous spot at the base.

Length, 5½ lines.

Auckland Islands; New Zealand.

Probably the same as the next species.

C. QUADRIMACULATA. *Swederus, Nya Handling, VIII., p. 289, n. 49* (1787).

Head brown, sparingly tomentose, with a few black bristles. Proboscis black. Palpi yellow. Antennæ inserted in a frontal groove, grey; seta with black hairs. Thorax sub-tomentose, black, the fore-

part indistinctly tessellated, the sides with a few hairs. Scutellum black, rounded behind, with a few bristles. Breast tomentose, black, marked on each side with two fulvous spots, the anterior somewhat larger at the base, the posterior at the apex. Abdomen purple-violet, shining, unspotted, tomentose; obscurely violet below. Wings brownish, veins black, a yellow spot at the base. Legs black, tomentose. The size of *M. vomitoria*.

New Zealand (Sir J. Banks).

*C. AUREOPUNCTATA.* *Macquart, l.c., Supp. 5, p. 130 (1854).*

*Female.* Palpi fulvous, broad. Face and cheeks black, with thin white down. Front with a broad black band; the sides with yellow down slightly golden, which descends a little on the sides of the face. Antennæ black, with faint green reflections, with thin white down, and black lines. A small humeral patch, and another at the insertion of the wings, orange-yellow. Abdomen brilliant blue, with faint green reflections. Legs black. Scales brownish, bordered with white. Wings greyish; veins normal.

Length,  $2\frac{1}{2}$ –4 lines.

Australia and New Zealand (M. Bigot).

This very common species may be the same as *C. icela* (Walker). It is viviparous.

*C. AUREONOTATA.* *Macquart, l.c., Supp. 5, p. 135 (Pollenia), (1854).*

Palpi black. Face black, with thin grey down; rather fulvous on the anterior border of the epistome. Front with a black band; the sides with thin grey down; a small patch of shining yellow at the base of the antennæ. Antennæ black; the second joint terminated by white down; style with but little elongated hairs. Eyes hairy. Thorax denuded of down, but with black hairs; a small patch of golden down under the shoulders, and another at the insertion of the wings. Abdomen very brilliant blue; belly shining-black, with blue reflections. Legs black. Scales brown, margined with white. Wings clear; externo-median vein slightly arched from the elbow.

Length, 3–4 lines.

New Zealand (M. Bigot).

Perhaps the same as the next species.

*C. HORTONA.* *Walker, l.c., p. 894 (1849).*

*Female.* Body black, dull, clothed with black hairs and bristles. Front flat, very broad; epistome not prominent; sides of the face bristly at the base; eyes coppery, fore-part convex, its facets very

small; proboscis black, clothed at the tip with tawny hairs; palpi black. Antennæ pitchy; second joint ferruginous; third decreasing in depth from the base to the tip, which is conical, full four times the length of the second; style black, very much longer than the joint. Thorax tinged with grey. Abdomen bright-blue, obconical, much broader but hardly longer than the thorax; tip tinged with purple beneath. Legs black, clothed with black hairs and bristles; foot-cushions tawny. Wings grey; wing-ribs and veins black; tip cross-vein forming a slightly obtuse angle with the fourth longitudinal vein, very slightly curved inward near the base, straight from thence to the tip, joining the border at some distance above the tip of the wing; lower cross-vein with two curves, the lower inward, shorter than the other, which is outward. Scales grey, with dull pale-yellow borders.

Length, 3 lines.

New Zealand (Dr. Sinclair).

C. ICELA. *Walker, l.c., p. 897 (1849).*

Body clothed with black hairs and bristles. Head covered with hoary bloom, adorned above with a tawny covering on each side of the crown; epistome slightly prominent; sides of the face beset with bristles for one-third of the length; eyes dark red, facets on the fore-part rather larger than those elsewhere; proboscis black, clothed at the tip with tawny hairs. Palpi tawny, beset with black bristles. Antennæ black, as long as the face; tip of the second joint and base of the third joint ferruginous; third joint linear, nearly truncated at the tip, about four times the length of the second; style much longer than the third joint. Thorax black, adorned with grey stripes; breast tinged with grey. Abdomen elliptical, brilliant purple mingled with blue, a little shorter and broader than the thorax. Legs black, clothed with black hairs and bristles; thighs tinged with grey; knees ferruginous; foot-cushions pitchy. Wings grey; wing-ribs and veins black; tip cross-vein forming an obtuse angle with the fourth longitudinal vein, having a short and extremely shallow inward curve near the base, straight from thence to the tip, joining the border a little above the tip of the wing; lower cross-vein with two slight curves, the lower inward, the other outward. Scales grey, with dingy-white borders.

Length,  $2\frac{3}{4}$  lines.

New Zealand (Dr. Sinclair).

C. ANTENNATIS, *sp. nov.*

Thorax black, with blue reflections, and with three indistinct pale bands on the fore-part; a faint reddish mark on the shoulders, and a

conspicuous yellow spot at the insertion of the wings; the whole covered with hairs, and with long black bristles. Scutellum black. Abdomen metallic-blue. Head dark pitch-brown; an orange spot on each side of the lower face between the antennæ and the eyes. Third joint of the antennæ bright orange; first and second joints and style black. Proboscis dark pitch-brown; palpi orange. Eyes naked. Legs black; a spot on the exterior of the anterior coxæ, and the knees of all the legs, reddish. Wings tinged with dusky; veins normal. Calyptræ black. Poisers orange.

Length, 5 lines.

Dunedin.

This species is intermediate between *C. dasyophthalma* and *C. aureo-punctata*, but is easily recognized from all our other blue-bottle flies by the third joint of its antennæ being orange-yellow.

*C. VIOLACEA.* *Macquart, Mus. Ex. 2, pt. 3, p. 128, tab. 16, f. 6.*

Violet. Thorax with white stripes. Palpi and face rufous.

Africa (Macquart); New Zealand (Nowicki).

## Genus—MUSCA.

*Linnaeus.*

Epistome slightly salient. Antennæ nearly reaching the epistome; the third joint three times the length of the second; style plumose. First posterior cell reaching the margin of the wing near the extremity; discoidal vein a little concave after the elbow.\*

*M. TAITENSIS.* *Macquart, l.c., Vol. II., p. 153, pl. 20, f. 8 (1842).*

Palpi black. Face and front black; sides with whitish down. Antennæ black. Thorax black with white bands. Abdomen marked with black and yellow. Legs black. Scales yellowish. Wings rather brownish; discoidal cell extending as far as two-thirds of the distance to the angle of the first posterior.

Length,  $2\frac{1}{2}$  lines.

Tahiti (Macquart); New Zealand (Dr. Sinclair).

## Genus—POLLENIA.

*Macquart.*

Face slightly swollen; epistome a little projecting. Antennæ short, not reaching the middle of the face; the second joint clawed;

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\* *Musca vicaria* (Walker) is mentioned by Nowicki as coming from New Zealand. I can find no description of it.

the third double the second; style generally plumose. Thorax covered with down. Wings almost closed; the first posterior cell open a little before the tip; sometimes closed; discoidal vein generally concave after the angle.

P. (?) LÆMICA. *White. Dieffenbach's New Zealand*, II., p. 291 (1843). *Walker, l.c.*, p. 906. *Voy. "Ereb." and "Terror,"* p. 7, f. 18.

Body tawny, clothed with black hairs and bristles. Head black above, pale tawny in front, thickly clothed beneath with golden hairs; a pitchy stripe, widening from the ocelli to the antennæ; facials obliquely striated; epistome prominent; sides of the face fringed with bristles along half the length; eyes brassy red, fore-part flat, composed of much larger facets than those elsewhere; proboscis black, pitchy, and clothed with pale-tawny hairs at the tip; palpi bright tawny, slender, slightly clavate, beset with black bristles. Antennæ black, a little shorter than the face; first and second joints ferruginous; third joint linear, rounded at the tip, full four times the length of the second. Style very much longer than the third joint. Disc of the thorax grey, adorned with six indistinct dark-brown stripes; breast thinly clothed with golden hairs. Abdomen dark green, obconical, a little shorter and broader than the thorax, tessellated with golden reflections, thickly clothed at the base and beneath with bright golden hairs. Legs pale tawny, clothed with black hairs and bristles; feet black; foot-cushions dark and tawny. Wings colourless, tawny at the base; wing-ribs ferruginous, veins black, ferruginous towards the base; tip cross-vein forming hardly more than a right angle with the fourth longitudinal vein, curved inward near the base, straight from thence to the tip, joining the border at some distance above the tip of the wing; lower cross-vein with two curves, the lower inward, the other outward and very much deeper than the first. Scales pale grey. Poisers tawny.

Length,  $4\frac{1}{2}$ –5 lines.

Mr. White considered this species to belong to *Sarcophaga*. It may belong to *Cynomyia*.

New Zealand (Dr. Sinclair); Australia; Polynesia.

## Genus—CURTONEURA.

*Macquart.*

Epistome a little prominent. Antennæ not reaching the epistome; the third joint at least triple the second; style plumose. First pos-

terior cell rather narrow, reaching the posterior border; discoidal vein convex after the angle.

C. STABULANS. *Meigen. Macquart, Dipt., II., p. 277.*

Ash colour. Palpi ferruginous. Face and sides of the front silvery. Frontal band and antennæ black; base of the third joint ferruginous. Thorax with black lines; sentellum and extremity ferruginous. Abdomen marked with black. Legs ferruginous; base of the thighs and tarsi black.

Length, 3-4 lines.

New Zealand ("Reise der 'Novara'"); Tasmania; Europe.

Probably introduced.

#### SECTION—MUSCIDÆ-ACALYPTERÆ.

Style of the antennæ generally one-jointed; first posterior marginal cell open; scales small or rudimentary.

#### Sub-Family—ANTHOMYZINÆ.

Third joint of the antennæ elongated; style two-jointed. Eyes generally contiguous in the male. Pulvilli elongated in the male. Scales medium or small.

#### Genus—ARICIA.

*Macquart.*

Style of antennæ plumose. Abdomen oval, generally furnished with bristles. Scales rather large, the lower valve passing the upper. Wings open.

A. MELAS. *Schiner, l.c., p. 302 (1868).*

Black. Thorax with two indistinct darker streaks. Abdomen yellow-grey, with whitish fine incisions; each segment with two or three black three-cornered spots together, which are separated by a small pale-dusted space, in the centre of which is a blackish spot. The spots are most distinct on the third segment; the fourth segment is black with two whitish spots on the posterior margin. Head black; face white; front faint black, broad in the male. Antennæ black; the third joint hardly twice as long as the two basal ones together; proboscis and palpi black. Legs pitch-black; knees small, rust-yellow; tibiæ a little lighter than the femora; a remarkable bristle-like covering. Wings tinged pale rust-brown, darker on the base and fore-rim; cubital and discoidal veins diverging in front; hind cross-vein S-shaped. Scales rust-yellow.

## Genus—CÆNOSIA.

*Meigen.*

Third joint of the antennæ elongated, slender, compressed; style plumose, tomentose, or naked. Front broad in both sexes. Abdomen elongated, compressed, bent over below, and generally swollen at the extremity in the male; oval in the female. Scales small; lower valve passing the upper. Wings without any point on the exterior margin.

C. SPINIPES. *Walker, l.c., p. 969 (1849).*

Body thinly clothed with black hairs and bristles. Head bright tawny; sides of the face without bristles; epistome not prominent; eyes red, fore-part rather flat, its facets much larger than those elsewhere; proboscis pitchy, clothed with tawny hairs; palpi tawny, beset with black bristles. Antennæ deep black, shorter than the face; third joint linear, slender, rounded at the tip, about thrice the length of the second, which is dark ferruginous; style black, slender, downy, rather stout for one-third the length from the base, full twice the length of the third joint. Thorax and breast grey; disc of the thorax with a tawny tinge, adorned with three slender brown stripes. Abdomen grey, spindle-shaped, adorned with a large triangular hoary spot on each side of the fore-border of every segment; ferruginous at the tip beneath, longer and a little narrower than the thorax. Legs dark tawny, clothed with black hairs and bristles; feet black, tawny towards the base; claws black; foot-cushions pale tawny. Wings grey; cross-veins clouded with brown; wing-ribs tawny; veins black, tawny towards the base; lower cross-vein almost straight, slightly oblique, separated by more than its length from the middle cross-vein, which is stouter and more oblique. Scales moderate, whitish with pale-yellow borders, the lower extending beyond the upper. Poisers tawny.

Length,  $2\frac{1}{4}$  lines.

## Sub-Family—TETANOCERINÆ.

Third joint of the antennæ oval; the second elongated, equalling or surpassing in length the third, hairy. Abdomen elongated, of five distinct segments.

## Genus—CYLINDRIA.

*Rob. Desvoidy.*

Front projecting. Antennæ as long as the head; second joint broad, compressed, equal in length to the third. Posterior femora



slightly elongated, thickened and spinose; middle tibiæ terminated by two small spines.

C. SIGMA. *Walker, l.c., p. 1084 (Tetanocera), (1819).*

Body ferruginous, thinly clothed with black hairs and bristles. Crown and hind part of the head beset with black bristles. Crown bright tawny, with the exception of a narrow ferruginous stripe between the ocelli and the base of the antennæ; face large, flat, silky-white, with a yellow tinge, having four little black hairs on each side; eyes black, fore-part red, rather flat, composed of much larger facets than those elsewhere; proboscis black, clothed with tawny hairs; palpi black, beset with black bristles. Antennæ ferruginous, nearly as long as the face; second joint thickly beset with black bristles; third conical, a little broader but hardly longer than the second, dark ferruginous except at the base; style black, tawny at the base, feathered with short hairs, much more than twice the length of the third joint. Crown concave in the middle, convex and ferruginous on each side. Fore-part of the thorax with four indistinct darker stripes; breast paler. Abdomen linear, a little longer and narrower than the thorax. Legs ferruginous, rather thick, clothed with short black hairs, beset with a few black bristles; claws black. Wings grey, tawny for half the breadth beneath the fore-border; adorned with nine brown spots, of which five are along the fore-border, one on the middle cross-vein, one at each end of the lower cross-vein, and one on the fourth vein at a short distance from its tip; the second and third of those on the fore-border are close together, and each is rather smaller than the first, but larger than the fourth; the fifth is larger than any of the preceding; wing-ribs tawny; veins black, tawny at the base; lower cross-vein curved into the form of an 8. Poisers pale tawny.

Length,  $3\frac{1}{2}$  lines.

New Zealand (Earl).

### Genus—LIMNIA.

*Rob. Desvoidy.*

Front projecting. Antennæ as long as the head; second joint broad, compressed, equal in length to the third. Posterior femora not elongated nor thickened; middle tibiæ terminated by two long spines.

L. TRANSMARINA. *Schiner, l.c., p. 234 (1868).*

*Male.* Rust-yellow. Thorax with whitish stripes; two longitudinal shining lines on the middle, two darker grooves on the sides, and the lateral margin to the shoulders white-striped; sides of the

breast white. Abdomen palish, basal segment darker, the whole surface shining-white, covered with blackish hairs; posterior clavate. Head rust-yellow; front deep brown round the ocelli, rim round the eyes white; bristles black, upon black warts. Palpi and antennæ yellow; third joint rather shorter than the second; style pubescent, whitish towards the point. Legs yellow; fore-part of the hips white; tarsi black-brown near the end. Wings tinged with rust-yellow, with brown spots on the margin, so that the subcostal cell appears dark and light; the rest with greyish spots, arranged in ring-like spots; lower margin brown; the two cross-veins brown-margined, the lower one bent; mediastinal cell free from spots.

Length, 3 lines.

#### Sub-Family—SCIOMYZINÆ.

Third joint of the antennæ oval or round, longer than the second, nearly reaching the epistome; face nearly perpendicular. Abdomen generally elongated, nearly naked, of more than five segments, convex, not terminated in a club. Legs moderate, without spines. Wings not quivering; mediastinal vein double; first posterior cell not narrowed.

#### Genus—SAPROMYZA.

##### *Fallen.*

Head sub-hemispherical. Face a little inclined backwards; epistome naked, not projecting. Antennæ short; third joint generally oblong, compressed, the extremity obtuse; style hairy or tomentose. Wings sometimes quivering.

S. DICHROMATA. *Walker, l.c., p. 988 (1849).*

Body tawny, thinly clothed with short black hairs. Head and thorax beset with a few black bristles; sides of the face without bristles; epistome not prominent; eyes pale red, convex, facets of the fore-part a little larger than those elsewhere; proboscis tawny, clothed with tawny hairs; palpi tawny, beset with black bristles. Antennæ tawny, very much shorter than the face; third joint conical, downy, about twice the length of the second; style black, slender, downy, much more than thrice the length of the third joint. Abdomen pitchy, nearly obconical, much shorter than the thorax. Legs tawny, clothed with short black hairs; feet dark tawny; claws black. Wings tawny; wing-ribs and veins tawny, the latter darker towards the tips; lower cross-vein nearly straight. Poisers tawny, with pitchy knobs.

Length,  $2\frac{3}{4}$  lines.

New Zealand (Dr. Sinclair).

S. SCIOMYZINA. *Schiner, l.c., p. 278 (1868).*

Thorax rust-yellow. Abdomen black. Head black; lower face standing back a little; rim of the eyes with white streaks. Antennæ blackish-brown; style pubescent. Legs black-brown; hips and root of thighs yellow; middle and hinder tarsi light brown. Wings tinged brownish.

Length,  $2\frac{1}{2}$  lines.

S. (?) DECORA. *Schiner, l.c., p. 277 (1868).*

Dark-brown. Thorax paler, with two separate white streaks from the front over the scutellum. Abdomen rather shining. Sides of the breast with whitish lines and spots. Head brown; front paler, with a reddish-yellow centre, and with white streaks on the margin of the eyes, which are also continued on the lower face; lower face yellow-red; proboscis with large lips; palpi longish, arcuate. Legs rather slim, those in the front lengthened; tibiæ clavate and shorter than the tarsi. Legs brown; middle tibiæ almost altogether, and hinder tibiæ with part of the middle, yellowish; tarsi the same; the last joint of posterior limb brown. Wings very slightly tinged with yellow; veins normal; the two cross-veins twice as wide apart as the hinder one on the rim of the wing.

Length,  $\frac{1}{2}$  line.

## Genus—SCIOMYZA.

### *Fallen.*

Head large. Face perpendicular, epistome not projecting, naked. Front very broad. Antennæ short, inclined, distant; the third joint oblong, obtuse; style plumose or naked. Eyes round. Abdomen depressed.

S. NIGRICORNIS. *Macquart, l.c., Supp. 4, p. 277, pl. 25, f. 11 (1850).*

No bristles on the epistome. Face and front fulvous, with thin whitish down; frontal band testaceous. The two first joints of the antennæ testaceous; the third black, slightly elongated; style naked, tomentose at the base. Thorax testaceous, with indistinct bands. Abdomen testaceous, short. Thighs a little swollen, the tip black, the first pair in the male armed with bristles; tibiæ fulvous, the tips black; tarsi black, the first joint yellow. Wings yellow.

Length,  $3\frac{1}{2}$  lines.

Akaroa and Tasmania.

## Sub-Family—ORTALIDÆ.

Third joint of the antennæ oval or elongated; longer than the second. Head hemispherical; front without any dilatation; mouth with a hood under the epistome; face convex or keeled. Abdomen generally oval; oviduct not protruding. Legs moderate. Wings raised, quivering.

## Genus—LAMPROGASTER.

*Macquart.*

Proboscis very thick; palpi small. Hood convex. Face a little inclined; epistome projecting. Antennæ short, scarcely half the length of the face, the third joint triple the second; style naked. Abdomen oval. Spines on the middle tibiæ very small. Wings large; the first transverse vein oblique.

L. STRIGIPENNIS. *Macquart, l.c., Supp. 4, p. 20, pl. 27, f. 2 (Tephritis)*, (1850).

Green. Abdomen with grey bands. Front testaceous. Wings with three dusky bands, the base thin.

Length,  $2\frac{1}{2}$  lines.

Australia (Macquart); New Zealand ("Reise der 'Novara'").

L. CÆRULEA. *Macquart, l.c., Supp. 1, p. 212, pl. 18, f. 15 (Tephritis)*, (1846).

Shining-blue. Wings with four dusky bands.

Length,  $2\frac{1}{2}$  lines.

Sydney (Macquart); New Zealand ("Reise der 'Novara'").

## Sub-Family—GEOMYZINÆ.

Small. Third joint of the antennæ oblong; the second shorter; style naked or hairy. Abdomen oval or oblong, convex. Legs moderate. Wings generally closed, not quivering; the mediastinal cell generally simple.

## Genus—OPOMYZA.

*Fallen.*

Face a little inclined backward; epistome sometimes naked, sometimes with a few bristles. Antennæ inclined; third joint oval; style with fine hairs, especially above, sometimes tomentose. Eyes round. Thorax elongated, of six distinct segments. The second cross-vein of the wing generally near the internal border.

*O. APICALIS.* *Walker, l.c., p. 1114 (1849).*

Body pale ferruginous, shining. Head and thorax beset with very few black bristles. Head pale tawny beneath; eyes red; proboscis, palpi, and antennæ pale tawny. Antennæ much shorter than the face; third joint conical, longer than the second; style slender, black, downy, tawny at the base, more than thrice the length of the third joint. Abdomen oval, a little longer than the thorax, pitchy above, except at the base. Legs tawny; claws black. Wings colourless; a brown spot at the tip between the second and third longitudinal veins. Wing-ribs tawny; veins pitchy, tawny towards the base; longitudinal veins straight; lower cross-vein nearly straight, almost upright, parted by more than twice its length from the middle cross-vein, by more than thrice its length from the end of the fourth longitudinal vein, and by less than half its length from the end of the fifth longitudinal vein. Poisers whitish.

Length,  $1\frac{1}{2}$  lines.

New Zealand (Sir J. Hooker).

#### Sub-Family—HETEROMYZINÆ:

Third joint of the antennæ round. More than one cross-vein in the wing, distant from each other. Wings longer than the abdomen. First joint of the tarsi not dilated.

#### Genus—CÆLOPA.

##### *Meigen.*

Body oblong. Head rather small. Proboscis thick. Palpi small, oval. Face short, very concave; epistome salient, hairy. Front very broad, flat, obtusely advanced, covered with long bristles. Antennæ retracted, the second joint thick, bordered with bristles, the third smaller, lenticular. Eyes almost round. Thorax elongated, enlarged behind; scutellum small. Abdomen oblong, of five distinct segments. Feet very thick; the second, third, and fourth joints of the tarsi conical. Wings long.

*C. LITTORALIS, sp. nov.*

Grey. A broad band on the head, stretching up on each side of the ocelli. Antennæ, palpi, proboscis, and legs reddish-brown. Legs and abdomen with long black hairs; thorax with short black hairs. Wings hyaline, with brown veins.

Length: Male,  $2\frac{1}{2}$  lines; female, 3 lines.

Duncdin; Wellington. On seaweed, common.

## SUB-ORDER—PUPIPARA.

Viviparous; larva and pupa developed in the abdomen of the mother. Head retracted. Antennæ in the cavity of the head. Parasitic.

Family—HIPPOBOSCIDÆ.

Spider-like, horny, flat-bodied, with large eyes; wings developed; poisers free, small.

## Genus—ORNITHOMYIA.

*Latreille.*

Head situated in a notch in the thorax; antennæ elongated beyond the palpi; palpi cylindrico-conical, hairy. Antennæ in the form of hairy valves. Claws of the tarsi tridentate. Wings obtuse, the mediastinal vein double; basal cells nearly equal in length; one distinct anal cell. Living on birds.

O. OPPOSITA. *Walker, l.c., p. 1145 (1849).*

Body tawny, smooth, shining, thinly beset with black bristles; antennæ and palpi dark brown; eyes and ocelli pitchy; facets of the eyes rather large, especially next the crown: a short spine projecting on each side of the fore-border of the thorax, which has one longitudinal and two cross furrows; one of the latter disappears in the disc. Abdomen dull, thickly clothed with black hairs. Legs pale tawny, tinged with green, beset with a few bristles; claws black, pulvilli whitish. Wings pale brown; veins pitchy-black.

Length, 2 lines.

New Zealand (Earl).

# INSECTA ORTHOPTERA.

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## ORDER—ORTHOPTERA.

Wings four; the two anterior coriaceous, pergamenaceous, or sub-membranous; the two posterior membranous, folded longitudinally. Mouth masticatory; mandible toothed; labium completely cleft. Larva and pupa more or less resembling the imago, but without wings.

Anal segment without a forceps.

Hind legs formed for walking.

Head retracted. *Cursoria*.

Head exerted. *Gressoria*.

Hind legs formed for leaping. *Saltatoria*.

Anal segment with a movable forceps. *Euplexoptera*.

## SECTION—CURSORIA.

Body ovate, depressed. Head retracted into the prothorax. Legs slender.

### Family—BLATTIDÆ.

Antennæ setaceous; tibiæ spiny; tarsi five-jointed; wing-covers overlapping medially; abdomen with nine or ten dorsal, and six (female) or eight (male) ventral, rings.

### Genus—BLATTA.

#### *Linnaeus*.

Fore wings fully developed, coriaceous, smooth, with distinct veins; the anal area with five or six axillary veins; infra-median vein of the fore wings flexuous, not angular; that of the hind wings emitting no branches towards the dividing vein. Femora armed with spines. Supra-anal lamina triangular, entire or slightly notched. Subgenital lamina of the male without, or almost without, styles; apical ventral segment of the female ample, flat, with no subgenital lamina.

B. CONJUNCTA. *Walker, Cat. Blattariæ Brit. Mus., p. 109 (1868).*

*Male.* Testaceous, fusiform, smooth, shining, flat. Head extending rather beyond the prothorax. Eyes piceous, rather far apart.

Antennæ pubescent, rather stout, a little longer than the body; joints compact, very numerous. Prothorax much narrower in front, with a broad, paler, nearly hyaline lamina on each side, which is rounded; hind-border straight; fore-border truncated. Abdomen extending beyond the hind wings; styles rather long and stout. Cerci very long, picceous towards the tips. Legs stout; femora with a few short bristles; arolia large. Wings not extending beyond the abdomen. Fore wings with a broad, thickly and irregularly reticulated costal area; costa rounded; veins pale testaceous; post-medial costal veins forked; transverse sectors rather numerous and irregular. Hind wings pale cinereous; veins pale testaceous. Length of the body,  $5\frac{1}{2}$  lines; of the wings, 16 lines. (Walker.)

New Zealand (Colonel Bolton).

B. LATIPENNIS. *Brunner von Wattenwyl, Nouveau Système des Blattaires*, p. 109 (*Phyllodromia*), (1865).

*Male and Female.* Testaceous. Head large, brown; pronotum broad, truncated before and behind, pellucid; disc the same colour. Elytra arched, broad at the shoulders; anal vein sinuated, scarcely impressed, reaching the border near the middle. Points of the wings obtuse. Scapular vein with six branches, the other veins irregular. Abdomen ferruginous, above and below bordered with brown.

Length: Male, 10 mm.; female, 12 mm.

Auckland ("Novara" Exp.); Ceylon (Sidney).

## Genus—PERIPLANETA.

*Burmeister.*

Wings small or none. Femora armed with many spines. Apical ventral segment of the female with valves. Cerci extending beyond the supra-anal lamina, which in both sexes is emarginated or quadrate, acutely angular or lobate.

P. FORTIPES. *Walker, Cat. Blatt. Brit. Mus.*, p. 137 (1868).  
*Polyzosteria novæ-seelandiæ*: *Watt, Blatt.*, p. 218.

*Male and Female.* Black, fusiform, shining, very thickly and minutely punctured. Head smooth, extending a little beyond the prothorax in the male, but not in the female; sockets of the antennæ, fore-border, and palpi picceous. Eyes picceous, wide apart. Antennæ slender, dark red, black towards the base, as long as the body. Prothorax widening from the fore-border to the hind-border, with a very shallow furrow on each side; fore-border hardly truncated; sides



rounded; hind-border straight. Abdomen with the hind angles of the sixth and seventh abdominal segments elongated and acute; supra-anal lamina truncated. Cerci long, lanceolate. Legs robust, reddish-black; femora with stout spines; tarsi red towards the tips; arolia large. Wings none. Length of the body, 11–13 lines. (Walker.)

Var.  $\beta$ . A piceous tinge along the sides of the thorax.

Var.  $\gamma$ . Femora and tibiae red.

Var.  $\delta$ . Tibiae bright-red, black at the base and at the tips.

Var.  $\epsilon$ . Antennae and legs wholly black.

P. UNULIVITA. *Walker, Cat. Blatt. Brit. Mus.*, p. 144 (1868).

*Male and Female.* Testaceous, fusiform, smooth, shining. Head not extending beyond the prothorax; two black stripes, which are dilated towards the vertex. Eyes black, wide apart. Antennae piceous, slender, testaceous at the base, a little longer than the body. Prothorax somewhat conical; two undulating black stripes, which do not extend to the fore-border, the latter hardly truncated; sides slightly rounded; hind-border straight. Abdomen with two stripes and the apical part black, or almost wholly black; supra-anal lamina bilobed, notched at the tip; sides deflexed; styles of the male distinct. Cerci tawny, flat, long, lanceolate. Legs short, thick; femora with slender spines; arolia moderately large. Length of the body,  $7\frac{1}{2}$  lines. (Walker.)

P. ORIENTALIS. *Linnaeus. Serville, Orthoptères*, p. 72.

Body reddish-brown; labrum yellow, a spot of the same colour near the base of each antenna. Prothorax almost orbicular, smooth, shining, with a broad and oblique impression on each side. Fore wings sensibly shorter than the abdomen, of a clearer tint than the rest of the body. Hind wings rather shorter than the fore wings, dirty yellow. Antennae much longer than the body, rather pubescent, reddish-brown. In the female the hind wings are absent, and the fore wings are rudimentary. Length, 10 lines.

Introduced into New Zealand.

P. TRUNCATA. *Watt, Blatt.*, p. 217 (1865).

*Female.* Testaceo-castaneous. Pronotum oblong, rufo-castaneous, margined with testaceous. Elytra horny, subquadrate, sutural margin close; anal vein impressed. Wings none. Legs testaceous. Abdomen brown washed with testaceous.

Length, 17 mm.

New Zealand and New South Wales (Wattenwyl).

## SECTION—GRESSORIA.

Body long and narrow. Head exerted. Legs slender, the femora sometimes compressed or dilated.

## Family—MANTIDE.

Head free, vertical; thorax and abdomen elongate; wings large; front legs flattened, sharp, raptorial. Animal-feeders.

## Genus—TENODERA.

*Burmeister.*

Prothorax very long, strongly keeled. Superior wings submembranaceous, translucent, with some horny patches behind the principal longitudinal vein; the margin firmer than the space immediately behind the principal longitudinal vein. Entirely green.

*T. INTERMEDIA.* *Saussure, Mitt. d. Schw. Ent. Ges. III., p. 233 (1870).*

Smaller than *T. superstitione*; prothorax shorter; base of the wings with a brown spot; anterior coxæ finely denticulated.

*Female.* Length, 85 mm.; pronotum, 31 mm.; elytra, 62 mm. New Zealand (Saussure).

## Family—PHASMIDÆ.

Body linear, rod-like, with all the legs equal, and often lobate dilatations of the femur and tibia. Vegetable-feeders.

## DIVISION—APTEROPHASMINA.

Tegmina and wings wanting in both sexes when the insects have arrived at their full growth.

## Genus—BACILLUS.

*Latreille.*

Body filiform; thorax long; the metathorax considerably elongated, glabrous. Legs long or of moderate length, simple or armed with small spines. Antennæ very short, or at least not so long as the thorax, with few (scarcely ever more than twenty) joints, the basal joint often broad and flat. Tarsi of the fore legs with the basal joint elongated.

*B. HOOKERI.* *White, Voy. "Ereb." and "Terror," Ins., p. 24, pl. 6, f. 6 (1846). Westwood, Cat. Orthopterous Insects in Brit. Mus., Pt. I., p. 14.*

Green; head obliquely keeled between the eyes and the base of the antennæ, vertex with thin black lines, and two black lines on the

sides of the head ; this and the thorax smooth ; pronotum with a thin median black line in front and a shorter one behind ; metanotum with a black median line on the anterior portion ; legs acutely keeled ; the single keel of the femora variably serrated ; tibiæ unarmed ; antennæ black, the two basal joints yellow. (Westwood.)

*Male.* Length of body,  $2\frac{1}{3}$  inches ; antennæ, 7 lines ; prothorax,  $1\frac{1}{2}$  lines ; mesothorax, 5 lines ; metathorax, 4 lines ; abdomen, 11 lines + 4 lines = 15 lines.

*Female.* Length of body,  $3\frac{1}{2}$  inches ; antennæ, 12 lines ; prothorax, 2 lines ; mesothorax, 8 lines ; metathorax,  $7\frac{1}{2}$  lines ; abdomen, 16 lines + 6 lines + style (anal) 2 lines = 24 lines.

B. GERHARDII. *Kaup, Proc. Zool. Soc., p. 577 (1866).*

Green ; head obliquely keeled between the eyes and the base of the antennæ ; vertex with two black spots ; occiput globular ; this and the thorax subgranular ; meso- and metathorax armed with small spines ; tibiæ and tarsi with small acute foliaceous lobes near the base. (Kaup.)

Length of the body, 4 inches 2 lines ; antennæ, 6 lines ; mesothorax,  $7\frac{1}{2}$  lines ; metathorax, 7 lines ; abdomen (with the short anal style  $2\frac{1}{2}$ ), 22 lines.

Hab., Invercargill.

B. GEISOVII. *Kaup, Proc. Zool. Soc. (1866), p. 578.*

Green ; head obliquely keeled between the eyes and the base of the antennæ ; vertex and occiput with ten black spines ; prothorax granulated ; meso- and metathorax and abdominal segments spinose ; legs spinose and foliaceous. (Kaup.)

*Male.* Length of the body,  $18\frac{1}{2}$  lines ; antennæ, 4 lines ; prothorax, 1 line ; mesothorax,  $3\frac{1}{2}$  lines ; metathorax, 4 lines ; abdomen, 10 lines + 1 line = 11 lines.

B. HYSTRICULEA. *Westwood, Cat. Orthop. Ins., p. 16, pl. 1, f. 4 (Pachymorpha), (1859).*

*Female.* Brown, rugose, opaque, armed with numerous spines ; sides of the mesonotum ferruginous ; apical segment of the abdomen yellowish ; joints of the antennæ obscure ; head with two tubercles between the eyes ; abdomen armed on the back with spines, the fourth segment with foliose appendages at the sides ; legs spiny. (Westwood.)

Length of the body, 20 lines ; antennæ, 4 lines ; prothorax,  $1\frac{1}{2}$

lines; mesothorax, 4 lines; metathorax,  $3\frac{1}{2}$  lines; abdomen, 7 lines + 3 lines = 10 lines.

In the *Male* the body is without spines, and the fourth abdominal segment has no foliaceous appendages.

### Genus—ACANTHODERUS.

*Gray.*

Body scabrous. Head small, subquadrate. Antennæ moderately long, setaceous, with the second joint much shorter than the third. Thorax cylindrical, shorter than the abdomen, spinose. Metathorax nearly as long as the mesothorax. Abdomen rather short, cylindrical. Legs moderately long, more or less spined, or furnished with foliaceous lobes. Tarsi with the basal joint shorter than the two following.

A. SPINIGER. *White, Voy. "Ereb." and "Terror," Ins., p. 24 (1846).*

*Male.* Head greenish-grey, with a broadish protuberance between the eyes, divided longitudinally in the middle; vertex smooth; antennæ greyish, with the third and following joints black at the tip (only fourteen joints remain, of which the terminal ones are long); prothorax greenish-grey, smooth; mesothorax narrow, green, cylindrical, with about eighteen strong spines, placed somewhat in pairs, nine on the upper and nine on the under side, brownish-black at the end; metathorax green, narrow, cylindrical, with three spines above and eight below; abdomen sub-cylindrical, the joints thickened, first segment with two spines in the middle on the under-side; (fore legs broken off;) two hind pairs greyish, with six wide brown bands; femora white at the base, with two short spines at the very end, and two longer on the inside near the tip; tibiæ with a slight tooth on the outside near the base; tarsi slender. (White.)

Length of the body, 3 inches 7 lines; head, 2 lines; prothorax,  $1\frac{1}{2}$  lines; mesothorax, 10 lines; metathorax,  $8\frac{3}{4}$  lines; abdomen, 19 lines + 3 lines = 22 lines.

A. HORRIDUS. *White, Voy. "Ereb." and "Terror," Ins., p. 24, pl. 5, f. 4 (1846). Westwood, Cat. Orthop. Ins., p. 49.*

Head grey; a slight ridge with four sinuations behind the antennæ and between the eyes; two spines and two or three tubercles on the vertex. Prothorax grey, with several small irregular conical tubercles; meso- and metathorax brown, with many longish spines, especially on the sides and under parts; there are several tubercles on the upper parts. Abdomen on the under side with spines shorter than those on

the thorax ; the upper parts with several subspiniiform tubercles ; fourth and sixth segments dilated on the sides at the end ; coxæ of the fore legs with four or five spines ; coxæ of the middle and hind legs with two spines ; femora sharply angled, some of the angles with a few teeth ; a crested dilatation at the base of the tibiæ of the two hind pairs ; basal joints of the tarsi of two hind pairs of legs crested, with a notch at the ends. (White.)

Length of body, 5 inches 9 lines ; head, 3 lines ; metathorax, 16 lines ; mesothorax, 12 lines ; abdomen,  $30 + 6$  lines = 36 lines.

A. PRASINUS. *Westwood, Cat. Orthop. Ins., p. 49, pl. III., f. 2* (1859).

Green, rather polished. The head considerably larger and wider than the prothorax, oval, with a number of small spines on the crown arranged symmetrically. The antennæ rather short, brown, with the broad basal and second joint fulvous. The prothorax entire ; the mesothorax gradually dilated from the fore margin to the middle, behind which the sides are parallel ; the upper surface is armed with a number of small spines placed irregularly ; the metathorax is slightly wider than the mesothorax, being rather swollen in the middle on each side, and in front of the base of the hind feet ; its upper surface bears a few small erect spines ; the hinder margin, as well as that of the basal segments of the abdomen, being slightly margined. The abdominal segments are gradually narrowed from the base to the extremity, which is furnished with two large oval foliolets ; the sixth segment is constricted in the middle, with its hinder angles prominent. The fore legs moderately long ; the femora bent at the base, and armed with several spines on the upper edge, the tibiæ simple ; the four hind femora thickened and angulated, with a spine near the base of the upper edge ; the under edge with several spines, those near the extremity being largest ; the tibiæ rather dilated, with a small spine near the base. The operculum has a small spine at its base, and extends to the middle of the ninth dorsal segment. The meso- and metasternum and abdominal segments beneath are armed with a few very small tubercles. (Westwood.)

Length of body, 3 inches 7 lines ; antennæ, 9 lines ; head, 3 lines ; prothorax, 2 lines ; mesothorax,  $7\frac{1}{2}$  lines ; metathorax, 7 lines ; abdomen,  $17 + 6$  lines = 23 lines.

New Zealand (Sir G. Grey).

## SECTION—SALTATORIA.

Body generally slender; hind legs saltatorial, the femora thickened. Female generally with an ovipositor.

Elytra horizontal in repose. *Gryllidæ*.

Elytra inclined in repose.

Antennæ long, setaceous. *Locustidæ*.

Antennæ short, filiform. *Acrididæ*.

## Family—GRYLLIDÆ.

Body cylindrical; head free, thick; antennæ setaceous; fore wings horizontal, hinder larger, closely folded.

## Genus—GRYLLOTALPA.

*Ray*.

Fore legs fossorial, palmate; hind tarsi normal; tarsi three-jointed; ovipositor not exerted.

G. AFRICANA. *Pal. Beauv. Walker, Cat. Dermap. Salt. Brit. Mus., p. 4.*

Body silky, reddish-brown above and yellowish-brown and very pubescent below; front femora not notched in front.

Length, 13 to 14 lines.

South Africa; India; Australia; New Zealand (Mr. Churton; Major Parry). No doubt introduced from Australia. I have seen no New Zealand specimens.

## Genus—GRYLLUS.

*Linnaeus*.

Fore legs simple; head prominent, rounded in front. Hind tibiae with stout approximate spines; tarsi three-jointed, the first joint smooth in the hind legs. Oviduct long, narrow.

G. FULIGINOSUS. *Serv., Hist. Orth., p. 334 (1839). Walker, l.c., p. 42.*

Head and thorax shining-black; elytra scarcely longer than the abdomen, uniformly blackish in the male, shaded with paler in the female, the sides depressed, smoky-grey with brown nervures. Wings smoky, prolonged into a tail which extends half an inch beyond the elytra. Abdomen blackish. Legs blackish; posterior thighs strong, tinted reddish, especially at the inferior base; posterior tibiae armed above, for the lower three quarters of their length, with two rows of strong spines, six on each side. Antennæ black, about the length of the body. (Serville.)

Length, 1 inch.

Australia. Auckland, Wellington, Nelson. Probably introduced from Australia.

## Genus—SCLEROPTERUS.

*Hay.*

Fore legs not fossorial. Head prominent. Hind tibiæ with slender wide-apart spurs. Fore wings complete, coriaceous, not reticulated.

S. MAORICUS. *Walker, Cat. Derm. Salt. Brit. Mus., p. 74 (1869).*

*Female.* Black, shining. Eyes piecous, very prominent. Third joint of the palpi clavate, truncated. Antennæ extremely slender, more than twice the length of the body. Prothorax with cinereous down. Cerei and oviduct a little shorter than the abdomen. Cerci very slender. Oviduct curved upwards. Legs tawny; hind legs long, their tibiæ with three slender spines alternately on each side. Fore wings convex, extending to the tip of the abdomen, with no lateral keels. Hind wings not apparent.

Length of the body, 2 lines.

New Zealand (Colenso and Bolton).

## Family—LOCUSTIDÆ.

Body long, laterally compressed; antennæ setaceous; wings imbricated; males with a sound apparatus in the right elytron; tarsi four-jointed; claws without a distinct pulvillus. Oviduct more or less salient.\*

## Genus—DEINACRIDA.

*White.*

Body long, rather compressed, rounded above, wingless; head large; antennæ long and slender; palpi long, slender, clubbed at the end; mandibles rather short; fore tibiæ without a spine in the middle in front.

D. HETERACANTHA. *White. Gray's Zoological Misc., 1842, p. 78.*

*Dieffenbach's New Zealand, II., p. 280. Zool. "Ereb." and "Terror," Ins., p. 24, pl. 5, f. 1. Buller, Trans. N.Z. Inst., 1870, p. 35.*

Ochre-yellow; the end of the ovipositor, and the tips of the spines on the legs, brown; the margins of the abdominal segments lighter, the transversely-ridged and rough-surfaced femora with many light-coloured streaks; the greater portion of the dorsal surface of the

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\* The locality in the British Museum Catalogue of *Agræcia solida*, Sundaw Island, New Zealand, presented by J. B. Jukes, Esq., must be an error, as there is no such place, and Mr. Jukes never visited New Zealand. Sunday Island, Australia, is no doubt the correct locality.

thorax somewhat ferruginous. Head punctured on the vertex; antennæ at least two and a half times the length of the insect; labial palpi with the terminal joint swollen at the end; maxillary palpi long, the three last joints cylindrical, the last longest, gradually clubbed at the end. Thorax punctured, with some small smoothish places in the middle, the lateral margins somewhat thickened. Hind legs nearly twice the length of the insect; tibiæ quadrangular, broadest behind, the edges armed with spines coming out alternately; spines very strong and sharp. (White.)

Length of body (exclusive of appendages), 2-2½ inches.

North Island, not south of the Waikato District.

D. (?) *RUGOSA*. *Buller, Trans. N.Z. Inst.*, 1870, p. 36, pl. 5b, f. 1 and f. 3.

Intermediate in size between *D. heteracantha* and *H. megacephala*. The extreme length of the body is an inch and three-quarters, the thoracic shield measuring half an inch in length by three-quarters in width (following the curvature). Although a male specimen, the head is very small and rounded, measuring only half an inch in length by three-eighths in width. The eyes are large and very prominent; the antennæ comparatively short, measuring scarcely four inches. Femur one inch; tibia one inch; tarsus and claws half an inch. The edges of the thoracic shield are raised, and the surface is deeply punctured and indented. The posterior edges of the dorsal plates are raised, and the lower ones have a fringe of hard papillæ along their outer margin. All the plates are more or less punctured, and the whole surface presents a *roughened* appearance, which at once distinguishes the species from *D. heteracantha*, to which it more nearly approaches.

Head, thorax, and body bright reddish-brown, the edges of the plates darker; thoracic shield and two succeeding plates marked with black. Antennæ and legs yellowish-brown, the joints of the latter spotted with black. Under-parts yellowish-brown, darker on the edges of the abdominal segments. (Buller.)

Wanganui District.

## Genus—HEMIDEINA.

*Walker.*

Body long, convex, shining, wingless, nearly cylindrical, generally smooth. Head large, generally a little broader than the prothorax, very convex above, slightly prominent between the antennæ. Palpi long, slender. Antennæ very long, generally slender. Prothorax slightly transverse; border generally slightly reflexed. Abdomen



elongate. Oviduct curved upward, more or less long. Legs stout, rather long; four anterior femora unarmed; hind femora with a single row of three minute spines; four anterior with four minute spines on each side; *hind tibiæ more or less dilated*, with four long thick spines on each side; tarsi slender.

H. CAPITOLINA. *Walker, Cat. Locustidæ, Brit. Mus., p. 161 (1869).*

Yellow, shining, thinly punctured. Head extremely large, broader than the prothorax, reddish and very convex above, keeled, and with four yellowish streaks between the eyes; front black, transversely striated, with a reddish band; face yellow; labrum tawny. Mandibles black. Palpi tawny, first and second joints short; third and fourth long, of nearly equal length; fifth longer than the fourth, subelavate, and piceous at the tip. Third joint of the labial palpi clavate, piceous. Antennæ tawny, very much longer than the body. Prothorax black, transverse, broader than the mesothorax, broader in front, irregularly bordered on each side with yellow, this hue extending for a short space along the fore-border and along the hind-border. Mesothorax with a black spot on each side and with some minute black marks. Metathorax and abdominal dorsal segments with a row of black spots and with black bands on the hind-borders, the spots successively widening to the apical segment. Apical appendages and cerci tawny, the former twice the length of the latter. Legs stout, rather long; femora with a row of interrupted black streaks on each side; hind femora beneath with a few denticulations on each side and towards the tip, with a single row of four minute black-tipped spines; four anterior tibiæ with four small black-tipped spines on each side; hind tibiæ reddish, slightly dilated, with two small black-tipped spines beneath, and with four thick piceous spines on each side, the spines on the inner side much longer than those on the outer; tarsi reddish.

Length of the body, 18–21 lines.

H. MEGACEPHALA. *Buller, Zoologist, 1867, p. 850; Trans. N.Z. Inst., 1870, p. 36, pl. 5b, f. 2.*

Head of male very large. "The tibiæ are considerably thicker [than in *H. thoracica*], and more strongly armed with lateral spurs, although not longer than in other species; the thorax is of uniform dark umber, narrowly margined with brown; the head is almost entirely black, and the body deep reddish-brown with transverse bands of black. The femora are marked on each side with three series of minute black spots, which are more conspicuous in the male. The following are the measurements of the male: Head and mandibles,

one inch ; from anterior edge of thorax to end of abdomen, one inch and three-sixteenths ; the plate of the thorax measuring a quarter of an inch. The antennæ are four inches long ; femur, three-quarters of an inch ; tibia, one inch and three-sixteenths ; tarsus and claws, three-eighths of an inch. The vertex is much rounded or elevated, and perfectly smooth." (Buller.)

Wellington.

H. THORACICA. *White, Voy. "Ereb." and "Terror," Ins., p. 25, pl. 5, f. 2* (1816). *H. producta: Walker, Cat. Locustidæ, p. 163.*

*Female.* Tawny, cylindrical, shining, thinly punctured. Head black ; face and labrum tawny. Eyes ferruginous, prominent. Palpi testaceous ; fourth joint of the maxillary palpi longer than the third ; third joint of the labial palpi clavate, black at the tip. Antennæ piceous, tawny at the base. Prothorax slightly transverse, with an oblique blackish furrow on each side. Abdomen long ; hind borders of the segments piceous. Oviduct slightly curved, rather shorter than the abdomen. Legs stout, rather long ; femora with a row of short oblique interrupted black streaks on each side ; hind femora with a single row of black small spines which from the first to the fourth successively increase in size ; four anterior tibiæ with three rather small black-tipped spines on each side, excluding the apical spines ; fore tibiæ contracted near the base ; hind tibiæ slightly dilated, with four long thick black spines on each side, and with three minute spines.

Length of the body, 19 lines.

H. FIGURATA. *Walker, Cat. Locustidæ, p. 162* (1869).

*Female.* Luteous, convex, shining. Head tawny, thinly and finely punctured, with a slight forked keel between the sockets of the antennæ ; front finely and transversely striated. Eyes slightly prominent. Palpi tawny ; fifth joint subelavate, longer than the fourth ; third joint of the labial palpi elavate. Antennæ very much longer than the body. Prothorax transverse ; sides slightly reflexed ; a very slender longitudinal furrow and with two much curved transverse furrows ; several connected black marks in the disc, forming a somewhat lyre-shaped figure. Mesothorax, metathorax, and abdominal dorsal segments with a black band on the hind border of each, these bands attenuated on each side. Mesothorax with a few irregular black marks. Metathorax with a black patch on each side. Abdomen compressed, with a black stripe, which is dilated towards the tip.

Oviduct tawny, curved upward, piceous towards the tip, a little more than half the length of the abdomen. Legs stout, rather short; femora with a row of short oblique blackish streaks on each side; hind femora with a single row of three minute black-tipped spines near the tip; four anterior tibiae with four minute black-tipped spines on each side; hind tibiae with four long thick black-tipped spines on each side, and with three minute spines beneath.

Var.  $\beta$ . Head testaceous. Spines of the legs not black at the tips.

*Male*. Head blackish, larger than that of the female; abdomen without a stripe, wholly black towards the tip. Length of the body, 15–21 lines.

Distinguished from *H. thoracica* by the stripe on the abdomen. Wellington.

*H. ABBREVIATA.* *Walker, Cat. Locustidae*, p. 163 (1869).

*Female*. Tawny, convex, shining, thinly punctured. Head short, as broad as the prothorax, with a slight keel, which is flattened between the sockets of the antennae. Eyes black, slightly prominent. Mandibles black at the tips. Palpi testaceous. Antennae tawny, long, testaceous at the base. Prothorax with a very slender longitudinal furrow, with an oblique furrow on each side, and an anterior transverse furrow. Abdomen with blackish bands on the sutures of the dorsal segments: tip wholly blackish. Cerci tawny. Oviduct piceous, very slightly curved, less than half the length of the abdomen. Legs testaceous, thick, rather short; femora with oblique interrupted blackish streaks on each side, indistinct on the inner side; hind femora beneath with a single row of three minute piceous spines towards the tip; four anterior tibiae with four minute piceous spines on the outer side, and with three on the inner side; hind tibiae reddish, with four long thick piceous spines on each side; tarsi tawny.

Length of the body, 14 lines.

In caves (H. Drew, Esq.).

Distinguished from the last by its shorter abdomen, and much shorter oviduct.

*H. TIBIALIS.* *Walker, Cat. Locustidae*, p. 164 (1869).

*Female*. Tawny, convex, shining, thinly punctured. Head not broader than the prothorax; with a slight grooved keel between the sockets of the antennae; front transversely striated. Eyes piceous. Mandibles with piceous tips. Palpi piceous at the tips; fourth joint

of the maxillary palpi longer than the third; third joint of the labial palpi clavate. Antennae very much longer than the body. Prothorax slightly transverse; a very slender middle furrow and an oblique furrow on each side; a piceous patch in front. Abdomen with a narrow piceous band on the hind border of each dorsal segment. Oviduct hardly curved, a little shorter than the abdomen. Legs short, thick; femora with a row of short oblique black streaks on each side; hind femora with a single row of four minute black-tipped spines near the tip; four anterior tibiae with four small black-tipped spines on each side; four tibiae contracted near the base; hind tibiae dilated, with four long and very stout black spines on each side.

Length of the body, 15 lines.

Distinguished from *H. figurata* by its short and broad hind tibiae.

### Genus—CEUTHOPHILUS.

*Scudder.*

Head rather large, oval. Antennae long, slender, cylindrical; first joint as broad as long, longer and stouter than the rest, which are about equal in thickness, gradually tapering to the extremity; second quite short; third longest; the remainder unequal. Eyes sub-pyriform, sub-globose, crowded against the first swollen joint of the antennae. Maxillary palpi long and slender; first two joints equal, smallest; third fully equal in length to first and second together; fourth three-fourths as long as third; fifth nearly as long as third and fourth together; somewhat curved, swollen towards the extremity, split on the under-side almost its entire length. Sides of the thoracic nota broad, mostly concealing the epimera; wings wanting. Legs rather long; coxae carinated externally, the third pair but slightly, the first pair having the carina elevated into a sharp, the second into a dull, point at the middle; first two pairs of femora mostly wanting spines; hind femora thick and heavy, turned inward at the base, channelled beneath. Ovipositor generally rather long, nearly straight, but a little concave above, rounded off somewhat abruptly at the extremity of the sharp upturned point.

*C. (?) LANCEOLATUS.* *Walker, Cat. Locustidae*, p. 204 (1869).

*Male.* Piceous, convex, smooth, shining, testaceous beneath. Head a little broader than the prothorax, testaceous in front. Eyes black, nearly elliptical, not prominent. Mandibles black towards their tips. Palpi testaceous; third, fourth, and fifth joints of the maxillary nearly equal in length; third joint of the labial clavate. Antennae piceous, testaceous at the base. Prothorax transverse, a little broader

in front. Abdomen tapering from the thorax. Cerci testaceous. Legs testaceous; femora without spines; hind femora piceous above at the tips; tibiæ piceous above; four anterior tibiæ with three or four small spines on each side; hind tibiæ minutely serrated on each side, with four long spines, two of which are sub-apical, and two apical.

Length of the body,  $4\frac{1}{2}$  lines.

In caves (H. Drew, Esq.).

## Genus—MACROPATHUS.

*Walker.*

*Male.* Body small, convex, smooth, shining. Head large, as long as the prothorax; fore part nearly horizontal; labrum prominent. Mandibles small. Eyes small, nearly elliptical, not prominent. Maxillary palpi very slender, longer than the head and prothorax together; fourth joint a little longer than the third; fifth subclavate, longer than the fourth. Third joint of the labial palpi clavate, longer than the second. Antennæ extremely long; first joint very long and thick. Prothorax broadest in front; hind part elongated, conical. Mesothorax and metathorax much developed. Abdomen short, slightly compressed. Cerci slender, beset with long bristles, nearly as long as the abdomen. Legs very slender, extremely long, thrice or more longer than the body; hind femora with six minute spines beneath, slender except near the base; knees nodose; four anterior tibiæ with four or five slender spines; hind tibiæ with two rows of numerous very minute spines; tarsi very long and slender; first joint about thrice the length of the second; third less than half the length of the second; fourth a little shorter than the second; claws minute.

*Female.* Oviduct very slightly curved upwards, almost as long as the body. Antennæ rather shorter than those of the male.

New Zealand only.

M. FILIFER. *Walker, Cat. Locustidæ, p. 206 (1869).*

*Male.* Tawny. Eyes piceous. Mandibles with black tips. Palpi whitish. Tibiæ towards the tips and tarsi testaceous, paler in the fore legs than in the others. Antennæ about 96 lines in length, and thus more than nine times the length of the body.

Length of the body, 10 lines.

In caves (H. Drew, Esq.).

### *Group 2.*

*Male.* Body stout, convex, smooth, shining. Head short; fore part vertical; labrum prominent. Palpi long, slender; fourth joint

much longer than the third; fifth much longer than the fourth. Antennæ stout towards the base; nearly four times the length of the body. Thorax and abdomen as in the first group. Cerci lanceolate, setose, rather long and stout. Legs rather slender, very long; femora and four anterior tibiæ armed with a few spines on each side beneath; knees incrassated; hind tibiæ armed with numerous minute spines on each side beneath; first joint of the tarsi more than twice the length of the second; second more than twice the length of the third; fourth as long as the second.

*Female.* Oviduct slightly curved upward, much longer than the abdomen.

M. FASCIFER. *Walker, Cat. Locustidæ, p. 207 (1869).*

*Male.* Testaceous. Mandibles with black tips. Eyes and antennæ piceous. Palpi whitish. Prothorax with a piceous or black band on the fore border, and another on the hind border. Mesothorax, metathorax, and dorsal segments of the abdomen with piceous or black hind borders. Femora and tibiæ with piceous or black bands; tibiæ towards the tips and tarsi pale testaceous.

Length of the body, 12 lines.

In caves (H. Drew, Esq.).

### Group 3.

*Female.* Body deep, smooth, shining, slightly compressed, arched above. Head very short, vertical in front, where it is transversely and very slightly striated. Eyes elongated, oblique, slightly prominent. Mandibles small. Maxillary palpi very long and slender; third and fourth joints of equal length; fifth subclavate, much longer than the fourth. Third joint of the labial palpi clavate. Antennæ between thrice and four times the length of the body. Prothorax slightly transverse; border not reflexed; sides slightly rounded. Cerci long, slender, beset with long bristles, nearly one-fourth of the length of the oviduct. Oviduct very slightly curved upward, somewhat longer than the body. Legs slender, very long; four anterior femora with two minute spines beneath, near the tips; hind femora with four minute spines beneath; four anterior tibiæ with minute apical spines; fore tibiæ with four, and middle tibiæ with three, minute spines on each side beneath; hind tibiæ with above thirty minute spines on each side beneath (those towards the base extremely small), and with four apical spines, two of which are very long.

M. ALTUS. *Walker, Cat. Locustidæ, p. 208 (1869).*

*Female.* Testaceous. Eyes piceous. Palpi very pale yellow.

Antennæ tawny. Prothorax with a blackish band on the fore border and another on the hind border. Mesothorax, metathorax, and dorsal segments of the abdomen with a blackish band on each hind border. Oviduct tawny, piceous towards the tip. Femora with two brown irregular bands and with a more determinate blackish apical band; fore tibiæ with two blackish bands, pale yellow towards the tips; middle tibiæ with two blackish bands, and with an indeterminate piceous band nearer the tip; hind tibiæ piceous, testaceous beneath towards the tips; fore tarsi pale yellow.

Length of the body, 12 lines.

In caves (H. Drew, Esq.).

### Genus—HADENÆCUS.

*Scudder.*

Body small and slender; head similar to *Ceuthophilus*: antennæ very long and slender, exceeding the length of the body many times; basal joints much as in *Ceuthophilus*, except that the second is broader, and the fourth is more than half the length of the third; eyes as in *Ceuthophilus*. Maxillary palpi very long and slender; first joint short; second fully twice as long as first; third quite long, fully equalling twice the length of the second; fourth nearly as long as the third, slender at the base, thickened towards the tip; fifth longer than third, of a similar form to the fourth, but more incrassated at the tip, compressed laterally, slightly curved, and split at the under-side only at the tip. Tubercle of the vertex very small, pointed, bilobed. Epimera of the meso- and metathorax not covered by the sides of the meso- and metanotum; wings wanting; metasternum with a short sharp spine. Legs remarkably long and slender; coxæ carinated externally, the first pair having the carina elevated in the middle to a point; femora without spines; hind femora turned inwards and a little swollen at the base, extending over only the basal half; under surface delicately channelled; the two anterior tibiæ are slightly longer than their corresponding femora; tarsi much compressed laterally. Anal cerci long and slender; ovipositor long and slightly ensiform, rounded off very gradually at the extremity to a delicate point.

H. EDWARDSH. *Scudder, Proc. Boston Soc. of Nat. Hist.*, XII., p. 408 (1869).

Body uniform brownish-fuscous; front pale fuscous; palpi, tarsi, and apical third of tibiæ pale; antennæ brownish-fuscous. Length of pronotum, 6 mm.; of thoracic nota, together 11.5 mm.; of antennæ,

120 mm.; of maxillary palpi, 18.5 mm.; of fore tibiæ, 23 mm.; of hind tibiæ, 40 mm.

From a limestone cave, Collingwood, Nelson (Mr. H. Edwards).

### Genus—LIBANASA.

*Walker.*

*Female.* Body convex, smooth, shining, slightly compressed. Head short, as broad as the prothorax. Eyes oval, not prominent. Maxillary palpi about thrice the length of the labial; third and fourth joints about equal in length; fifth a little longer. Third joint of the labial palpi subelavate. Antennæ not less than twice the length of the body. Prothorax elongate; sides much rounded. Cerci slender, about one-fourth of the length of the oviduct. Oviduct curved upward, as long as the abdomen. Legs stout, rather long; femora unharmed; hind femora with oblique ridges along the outer side; four anterior tibiæ with four spines along each side, and with two spines above; hind tibiæ with eleven spines along the outer side, and with nine along the inner side; the four long spines and two apical short spines as usual.

New Zealand and South Africa.

L. PALLITARSIS. *Walker, Cat. Dermap. Salt., Part V., Supp., p. 24 (1871).*

*Male.* Tawny, convex, smooth, shining, testaceous beneath, slightly decreasing in thickness from the head to the tip of the abdomen. Head short; a nearly triangular black spot on the tip of the vertex, connected with a very deeply undulating black band on the front. Eyes whitish, elongate, not prominent. Mandibles black. Antennæ pale. Prothorax blackish, with a testaceous longitudinal line, and on each side with a large testaceous patch, which emits some branches; fore borders and sides slightly rounded; hind border notched in the middle. Abdomen shorter than the hind femora; apical appendages testaceous. Legs testaceous, slender; femora unarmed; tibiæ partly and slightly clouded with piceous; four anterior tibiæ with a few long slender spines on each side; hind tibiæ with very short spines on each side; tarsi whitish.

Length of the body, 7 lines.

New Zealand (Colenso).

L. (??) MACULIFRONS. *Walker, Cat. Locustidæ, p. 209 (1869).*

*Female.* Black, convex, smooth, shining, tapering from the head to the tip of the abdomen. Head with a band of four testaceous



spots on the front and with a testaceous spot on each side of the face, which is also testaceous. Eyes livid, elongated, not prominent. Maxillary palpi piceous, pubescent, very long; third, fourth, and fifth joints of equal length; fifth clavate. Antennæ piceous. Prothorax elongated; sides rounded. Abdomen tawny on each side and beneath. Cerci tawny, nearly erect. Oviduct piceous, slightly curved, tawny at the base, rather longer than the abdomen. Legs testaceous, slightly clouded with piceous; fore tibiæ with three rather long spines on each side.

Length of the body,  $7\frac{1}{2}$  lines.

New Zealand (Sir A. Smith).

### Genus—HYPEROMALA.

*Serville.*

All four wings membranous, of equal length, entirely covered by a prolongation of the prothorax, which is rather longer than the abdomen, and entirely covering it.

*H. SPECIOSA.* Thunb., *Nov. Ins. Sp.*, V., 268, pl. 3. *H. virescens*: Serv., *Hist. Orth.*, 545. Boisd., *Voy. "Astrolabe," Ent.*, pl. 10, f. 1.

Body green or yellowish; head and prothorax slightly rugose; prothorax conoid, more pointed in the female; a slight transverse keel in front; each angle with a spine stronger than those on the lateral keels. Wings shorter than the abdomen. Legs the same colour as the body.

Length of the male, 12 lines; of the female, 15 lines.

Australia (Boisduval), Ceram (British Museum).

I do not know on whose authority this insect has been included in the New Zealand fauna.

### Genus—DECTICUS.

*Serville.*

Head large; front convex, with a broad protuberance between the antennæ. Prothorax flat, narrower in front, more or less keeled on each side. Palpi slender, the maxillary double the length of the labial; last joint of the maxillary much longer than the penultimate, slightly swollen and truncated, as also is the last of the labial. Fore wings narrow, with a stridulant organ under each; hind wings rather shorter. Abdomen thick, rather short; sub-anal plate of the male large, reaching at least to the extremity of the abdomen, one-keeled

below, notched at the end, furnished laterally with a filiform appendage. Legs long, especially the hind pair.

D. SEMIVITTATUS. *Walker, Cat. Locustidae*, II., p. 263 (1869).

*Female*. Testaceous, smooth, shining. Head as broad as the prothorax, with a short porrect much-rounded protuberance, which has a blackish stripe; front very slightly oblique, with a distinct transverse suture between it and the face, which is very short. Eyes rather large and prominent, mottled with black. Mandibles with black tips. Maxillary palpi slender; fourth joint a little shorter than the third; fifth very slightly clavate, a little longer than the third. Antennæ very slender. Prothorax rather short, broader towards the hind border, which is straight; lateral keels slightly defined. Abdomen lanceolate, more than twice the length of the prothorax, with two very incomplete brown stripes. Cerci lanceolate, moderately long. Oviduct hardly curved, a little longer than the abdomen. Legs moderately long and slender; hind femora and four anterior tibiæ with a few very short and slender spines on each side beneath; hind tibiæ with four rows of numerous minute spines, and with very short apical spurs. Fore wings nearly half the length of the abdomen, with a blackish costal stripe.

Length of the body,  $7\frac{1}{2}$  lines.

Auckland (Dr. Sinclair).

## Genus—XIPHIDIUM.

*Serville*.

Head rather large; a distinct tubercle between the antennæ. Maxillary palpi longer than the labial; the last joint rather short, truncated, and rather widened at the end. Prothorax short, slightly keeled on the sides. Appendages of the abdomen scarcely visible; sub-anal plate very apparent, a little convex and pointed in the female, large and forked in the male. Fore wings narrow, linear, rounded at the tip, rather longer than the abdomen; hind wings slightly passing the abdomen in repose. The four anterior tibiæ very finely spinulose, the anterior having at the base a cavity covered with a membrane; posterior tibiæ with two rows of fine spines on the superior keels.

X. MAORICUM. *Walker, Cat. Locustidae*, Pt. II., p. 276 (1869).

*Female*. Grass-green. Prothorax and vertex of the head with a brown stripe, which is narrower towards the fore border of the prothorax and is lanceolate on the vertex, and is bordered with pale yellow on the outer side. Head with a slightly ascending rounded

protuberance between the antennæ. Eyes prominent. Antennæ brown, green at the base. Prothorax much dilated and obtusely angular in the middle on each side; lateral keels not defined; hind border slightly rounded. Mesothorax, metathorax, and abdomen mostly ferruginous. Cerci black. Oviduct brown, paler towards the tip, longer than the abdomen. Legs slender; hind femora with a single row of five very minute black spines; four anterior tibiæ with a few small spines on each side beneath; hind tibiæ with numerous very minute spines in four rows.

Var.  $\beta$ . Testaceous. Prothorax with the stripe only indicated by two interrupted brown lines.

Length of the body,  $7\frac{1}{2}$  lines; of the wings, 22 lines.

*Male* (?). Grass-green, short, smooth, shining. Prothorax and vertex of the head with a brown stripe, which is forked hindward in the former. Head slightly ascending, prominent and rounded between the antennæ; fore part oblique; front and face large, separated by a slight transverse suture. Eyes brown, irregularly tessellated with testaceous, rather large and prominent. Antennæ testaceous, with numerous brown rings. Prothorax partly testaceous in the disc, which has an irregular brown mark on each side; lateral keels not defined; sides much dilated, obtusely angular, partly bordered with brown; hind border rounded. Abdomen whitish, much longer than the prothorax, with a broad black stripe which occupies the whole of the tip. Cerci black, rather long. Legs testaceous; femora minutely reddish-speckled; hind femora beneath with a line of four minute black spines; four anterior tibiæ with two rows of minute spines beneath; hind tibiæ with two rows of numerous minute black spines beneath, and with a few of the same above, their apical spurs very short. Fore wings pellucid, as long as the abdomen, with a black costal stripe along half the length from the base; veins pale testaceous.

Length of the body, 6 lines.

New Zealand (Bolton and Colenso).

#### Family—ACRIDIDÆ.

Head vertical; body laterally compressed; forehead with a longitudinal keel; antennæ generally short, filiform; clytra small, with no sound-organs. Tarsi three-jointed; claws generally with a distinct pulvillus. Oviduct not prolonged.

#### Genus—CALOPTENUS.

*Burmeister.*

Prothorax not crested, but with three keels; prosternal spine

conical. Eyes oval, slightly prominent. Maxillary palpi cylindrical. Hind femora short and thick.

*C. MARGINALIS.* *Walker, Cat. Dermap. Salt., Pt. IV., p. 710 (1870).*

*Male.* Tawny, stout. Head and prothorax with two irregular black stripes, which are concisely bordered with white on the inner side, and are diffuse on the outer side. Head short, smooth; vertex convex; tip flat, pentagonal; front thinly punctured, with four well-defined keels which diverge towards the face. Eyes testaceous, sub-elliptical, much rounded on the hind side. Antennæ piceous towards the tips. Prothorax very finely scabrous, widening hindward; disc nearly flat, with a very slight middle keel, and with hardly distinguishable lateral keels; a longitudinal black streak on each side, and some blackish dots along the fore border and along the hind border; transverse impressed lines slight; fore border straight; sides slightly rounded; hind border slightly elongated, much rounded. Prosternal spine long, conical, slightly broader than thick. Abdomen with a broad black stripe on each side. Hind femora longer than the abdomen; hind tibiæ pale greenish-yellow, rather shorter than the hind femora, their spines with black tips. Wings rudimentary.

Length of the body,  $7\frac{1}{2}$  lines.

Var.  $\beta$ . *Male.* Ferruginous, tawny beneath. Head and prothorax with two less determinate stripes. Hind femora with some black marks on the outer side; hind tibiæ testaceous. Fore wings with several black dots.

New Zealand (Colonel Bolton).

## Genus—ÆDIPODA.

*Latreille.*

Head not prominent, nearly vertical; the anterior face with four longitudinal keels; eyes not prominent; antennæ moderately long but not very slender, not dilated at the tip. Prothorax keeled, the anterior part with some transverse striæ, the hind border not truncated. Prosternum smooth, without any transverse ridge. Body slightly compressed; the abdominal appendages short and setaceous. Wings generally longer than the abdomen; the costa of the fore wings not dilated. The four anterior tibiæ more or less spinous below, the posterior with two rows of spines; first joint of the tarsi elongated, the last furnished with a very small pulvillus between the claws.

Æ. CINERASCENS. *Fabricius (Gryllus). Gryllus migratorius: Rambur.*

Body smooth, green or brown; behind each eye a black longitudinal mark, rarely wanting. Prothorax with a slightly elevated, compressed keel, the disc generally with a more or less distinct black line on each side. Fore wings longer than the abdomen, transparent; some of the transverse veins yellowish, others blackish, these last form by their union a number of transparent spots; internal base yellowish-green, generally unspotted. Hind wings large, transparent, the internal base more or less washed with greenish-yellow; veins black or dark brown. Legs the same colour as the body; the internal face of the posterior femora with two or three black marks.

Length, from 1 to 2 inches.

Europe, Africa, Australia, New Zealand.

This species varies much in size and colour, and in New Zealand it frequently has a very dark hue.

#### SECTION—EUPLEXOPTERA.

Anal segment provided with a movable forceps. Under-wings folded both transversely and longitudinally.

##### Family—FORFICULIDÆ.

Antennæ filiform or setaceous; head free; no ocelli; labrum large, crescentic; labium cleft to the base of its stipites; prothorax quadrangular; hemi-elytræ much shorter than the abdomen, with no membranous area. Tarsus three-jointed. Abdomen nine-ringed, the seventh and eighth short in the female and covered by the sixth. The female incubates her eggs.

##### Genus—FORFICESILA.

*Latreille.*

Body smooth, slightly convex; abdomen elongated, thick; the second and third dorsal plates without any lateral tubercle; terminal segment largely developed, greater in the males than in the females; penultimate dorsal plate narrow; penultimate ventral plate prolonged in an obtuse triangle, leaving the sides of the last ventral plate uncovered. Head triangular, convex above. Antennæ 15–30-jointed; palpi filiform. Prothorax nearly square. Elytra and wings present or absent. Legs moderate; tarsi with the first and third joints elongated, the second small and bifid.

F. LITTOREA. *White, Voy. "Ereb." and "Terror," Ins., p. 24, pl. 6, f. 4, 5 (Forficula), (1846).*

Deep blackish-brown, with fulvous legs; head somewhat triangular, the sides behind the eyes rounded, very deep blackish-brown;

labrum, cibarial organs, and antennæ fulvo-testaceous ; two fulvous spots on the head, one close to the inside of each eye, a short fulvous line on the middle of the hind part. Antennæ with at least nineteen joints, first joint the longest, second very short, third three times the length of the second, fourth a little longer than the second, the others gradually increasing in length: Prothorax square, fulvous in front, with a short impressed line in the middle. Abdomen widest about the seventh joint, deep blackish-brown, the margins slightly fulvous, last segment of abdomen large, with some wide longitudinal lines above ; the forceps short, slightly hooked at the end, with two or three sinuations on the inner edge ; legs fulvous, tarsi without apparent pads. Apterous. (White.)

*Hab.* Under stones on the beach ; the whole of the North Island, and the north part of the South Island, as far as Martin's Bay on the West Coast.

# INSECTA HYMENOPTERA.

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## ORDER—HYMENOPTERA.

Four naked, membranous, unequal, few-veined wings. Mandibulate; labium and maxillæ forming a suctorial proboscis. Pupa incomplete, inactive.

### SUB-ORDER—MELLIFERA (BEES).

Neuters winged. Basal joint of the posterior tarsi dilated, adapted for collecting and carrying pollen. Females armed with a sting.

#### FAMILY—ANDRENIDÆ.

Mentum elongated. Tongue short; labium small at its extremity, and either spear-shaped or cordate, with a small ear-shaped lobe on each side; labium and terminal and maxillary lobes not forming an elongated proboscis. No neuters. Living solitary in burrows.

A. Three submarginal, or cubital, cells in the wing.

a. Marginal cell rounded at the extremity.

1. Spine of posterior tibiæ with a row of teeth. *Lamprocolletes*.

2. Spines of posterior tibiæ simple.

Third joint of maxillary palpi equal to the second. *Leioproctus*.

Third joint of maxillary palpi shorter than the second. *Dasycolletes*.

b. Marginal cell pointed at the extremity. *Halictus*.

B. Two submarginal or cubital cells in the wing. *Prosopis*.

#### Genus—LEIOPROCTUS.

*Smith*.

Head transverse, nearly orbicular, about the width of the thorax; antennæ placed on a slight curve on the vertex; mentum of moderate length, about three-fourths longer than the labium; the latter emarginate at the apex, and having at about half its length a transverse

process notched in the middle and sinuated on each side; at the lateral extremities of this process are placed the paraglossæ, dilated and pubescent at their apex; the labial palpi four-jointed, the basal joint about equal in length to the two following; the maxillary palpi six-jointed, the three basal ones of equal length, the following gradually a little shorter, the apical one very slender. Thorax ovate; the superior wings having one elongate marginal cell, rounded at its apex, and three submarginal cells; the first about equal in length to the two following; the second narrowed towards the marginal, receiving the first recurrent nervure in the middle; the third also much narrowed towards the marginal, receiving the second recurrent nervure near its apex. Spurs of the posterior tibiæ simple. Abdomen elongate-ovate, having an anal fimbria on the fifth segment; the sixth pubescent at the sides, naked down the centre.

*L. IMITATUS.* *Smith, Cat. Hymenopterous Insects, Brit. Mus., Pt. I., p. 9 (1853).*

*Female.* Black, at the base of the antennæ a little pale-yellow pubescence; the clypeus bright, smooth, and having deep punctures; the antennæ testaceous beneath. Thorax very smooth and shining above, having a few scattered punctures; the metathorax has an enclosed smooth shining space below the post-scutellum; the disc is thinly clothed with pale-yellow pubescence; that on the sides, beneath, and on the femora, trochanters, and coxæ, is nearly white. The legs dark rufo-testaceous, their claws ferruginous; the scopæ of the posterior tibiæ fulvous; the nervures of the wings ferruginous; the wings hyaline, and beautifully iridescent. Abdomen nigro-æneous, the margins of the segments piceous; the fourth and fifth segments have a thin fringe of pale-fulvous pubescence; the sixth clothed with the same, but having a smooth longitudinal space in the centre, widest at the base.

Length,  $4\frac{1}{3}$  lines.

## Genus—LAMPROCOLLETES.

*Smith.*

Head transverse, nearly rounded in front; ocelli placed in a slight curve. Mentum rather more than twice the length of the labium, which is sinuated on each of its anterior margins, thickly fringed with pubescence; the paraglossæ longer than the tongue, dilated and pubescent at the apex; labial palpi four-jointed, the basal one bent, about the length of the two following, the apical joint very slender; maxillary palpi six-jointed, the three basal joints of about



equal length, the following gradually a little shortened, the apical one very slender. Thorax nearly ovate, the wings having one elongate marginal cell, twice the length of the second and third submarginal cells, the first submarginal being of equal length to the two following; the second submarginal cell narrowed towards the marginal, receiving the first recurrent nervure in the middle, the second recurrent nervure uniting with the apical nervure of the third submarginal cell; one of the spines of the apex of the posterior tibiæ having on one side a row of bent teeth or hooks resembling a comb; the pubescence of the scopa beautifully pectinate or feathery. Abdomen ovate, furnished with an anal fimbria, and the sixth segment with a naked space margined laterally.

*L. FULVESCENS.* *Smith, Trans. Ent. Soc., 1876, p. 486.*

*Female.* Black; the front clothed with dense fulvous pubescence, palest on the clypeus; the cheeks have a pale-fulvous pubescence; the ocelli in a curve on the vertex, which is shining. Thorax: the mesothorax shining and punctured, clothed with fulvous pubescence, which is sparing on the disc; palest on the sides, beneath, and on the legs; the apical joints of the tarsi rufo-testaceous; the posterior trochanters with a floccus of pale pubescence, that on the tibiæ dense and fulvous; the calcaria pale testaceous; wings hyaline and iridescent, the nervures pale rufo-testaceous. Abdomen ovate and shining; the apical margins of the segments narrowly testaceous and thinly fringed with fulvous pubescence; the apical segment with a bright fulvous fimbria.

Length,  $5\frac{1}{4}$  lines.

## Genus—DASYCOLLETES.

*Smith.*

Head transverse, rounded in front; antennæ, the basal joint elongate-arcuate, about one-third the entire length; the stemmata placed in a slight curve; the mentum short and broad, anteriorly pointed in the middle, recurved on each side; the labium deeply emarginate at the extremity; the paraglossæ scarcely longer than the labium, broad and rounded at their apex; the labial palpi four-jointed, each joint slightly narrower. Maxillary palpi six-jointed, the two basal ones of equal length; the third two-thirds of the length of the second, the three apical ones being of about equal length, each gradually narrower than the preceding joint; apical joint filiform. Thorax ovate, the superior wings having one elongate marginal cell rounded at its extremity and emitting a short appendicular nervure;

submarginal cells three, the first equal to the two following in length; the second equally narrowed on each side towards the marginal, receiving the first recurrent nervure in the middle; the third submarginal cell narrowed about one-third towards the marginal; the apical transverse nervure curved outwardly.

New Zealand only.

D. HIRTIPES. *Smith, Trans. Ent. Soc.*, 1878, p. 7.

*Female.* Black; the pubescence fulvous. The front with long dark pubescence, that on the cheeks pale fulvous. The mesothorax shining, thinly pubescent, and not very closely punctured; the pubescence more dense on the scutellum and metathorax; the wings hyaline and iridescent. The legs with fulvous pubescence; the posterior tibiae with a dense scopa, and also a floecus on the trochanters; the apical joints of the tarsi rufo-testaceous. Abdomen shining and impunctate; the apical margins of the segments slightly testaceous; the fifth segment with a fimbria of bright fulvous pubescence; the apical segment with an opaque naked space, the sides pubescent.

Length, 5 lines.

Dunedin.

D. METALLICUS. *Smith, Cat. Hymen. Brit. Mus.*, Pt. I., p. 15 (1853).

*Female.* Black; the face thickly clothed with ochraceous pubescence, that on the vertex fuscous; antennæ testaceous beneath; the disc of the thorax shining, sparingly punctured, and thinly clothed with ochraceous pubescence, which is more dense on the sides, metathorax, and beneath; the pubescence beautifully plumose viewed under a moderate magnifying power; the legs very pubescent; the scopa on the posterior tibiae pale fulvous; wings hyaline. Abdomen metallic-green, the margins of the segments testaceous, covered with a thin, short, ochraceous pubescence, most dense on the sides and at the apex; beneath, the segments have a marginal fringe of long, pale, fulvous pubescence.

Length, 5 lines.

The *Male* closely resembles the female, but is rather smaller.

D. PURPUREUS. *Smith, Cat. Hymen. Brit. Mus.*, Pt. I., p. 15 (1853).

*Male.* Dark purple; the face clothed with griseous pubescence, the vertex with fuscous; on the thorax above it is also fuscous, but at the sides and on the legs it is griseous; the legs dark fusco-ferruginous, the apical joints of the tarsi ferruginous; on the metathorax, beneath the post-scutellum is an enclosed smooth shining space;

wings hyaline, beautifully iridescent, their nervures and tegulæ fusco-ferruginous. Abdomen shining, and having a little fuscous pubescence at the apex; beneath slightly piccons.

Length, 3 lines.

*D. VESTITUS.* *Smith, Trans. Ent. Soc., 1876, p. 485.*

*Female.* Head and thorax shining-black, the abdomen dark blue. Head: below the antennæ covered with white pubescence, above is a little that is fuscous; on the cheeks and head behind it is cinereous; ocelli in a curve on the vertex. Thorax: the mesothorax and scutellum with fine distant punctures; the pubescence on the sides of the thorax above fuscous, that beneath griseous; the femora fringed beneath with the same; the posterior coxæ with a white floccus; the pubescence on the posterior tibiae black exteriorly, interiorly nearly white; on the basal joint of the posterior tarsi it is yellowish-white within; the calcariae and claws of the tarsi pale testaceous; wings hyaline, the nervures dark fuscous. Abdomen with fine shallow punctures, leaving the apical margins of the segments glabrous; at the apex a little black pubescence. Length,  $5\frac{1}{2}$  lines.

*Male.* Very like the female; its general pubescence hoary; on the clypeus, cheeks, and thorax beneath it is white; wings hyaline, with the nervures testaceous. Length, 4 lines.

Wellington.

## Genus—PROSOPIS.

*Fabricius.*

Maxillary palpi six-jointed; labial palpi four-jointed. Ocelli disposed in a triangle on the vertex. Scutellum a little convex, armed. Spines on all the legs simple. Radial cell a little appendiculate; two cubitals (submarginal), the first larger than the second, receiving the first recurrent nervure near its junction with the second; this is a little narrowed towards the radial, receiving the second recurrent nervure. Claws small, unidentate.

*P. VICINA.* *Sichel, Reise der "Novara," Hymen., p. 143 (1867).*

*Male and Female.* Medium, black, finely punctated, almost naked; abdomen bluish; antennæ rufo-piccons below; the face of the female on both sides, and that of the male altogether, yellow; wings hyaline.

Auckland and Tasmania.

*P. AGILIS.* *Smith, Trans. Ent. Soc., 1876, p. 484.*

*Female.* Black; head sub-opaque, very closely and finely punctured; when viewed in front, nearly quadrate; a yellow macula

on each side of the face, which is broad and truncate opposite the insertion of the antennæ, and narrows to a point at the base of the mandibles; the flagellum, except two or three of the basal joints, fulvous beneath. Thorax slightly shining, very finely and closely punctured above; the metathorax smooth, shining and impunctate; wings sub-hyaline, the nervures black; an interrupted line on the collar, and the tubercles, yellow. Abdomen clongate-ovate, smooth and shining.

Length,  $3\frac{1}{2}$  lines.

*P. RELEGATUS.* *Smith, Trans. Ent. Soc., 1876, p. 485.*

*Male.* Black; head sub-opaque, very closely and finely punctured; the clypeus and inner orbits of the eyes, as high as opposite the insertion of the antennæ, yellowish-white, the mandibles with a longitudinal white stripe. Thorax: The disc closely and finely punctured; the metathorax with a triangular enclosed space at its base, which at its basal margin has a series of abbreviated striæ; a spot on each side of the collar, and the tubercles, yellow. Wings sub-hyaline and iridescent, the nervures black; the first reeurrent nervure uniting with the first transverso-medial nervure; the second recurrent received near the apex of the second submarginal cell; the calcaria pale testaceous. Abdomen oblong-ovate, shining; towards the base very finely punctured.

Length,  $3\frac{1}{2}$  lines.

*P. CAPITOSUS.* *Smith, Trans. Ent. Soc., 1876, p. 485.*

*Female.* Black; the head nearly quadrate above, slightly narrowed anteriorly towards the clypeus, closely and finely punctured; the flagellum, except the three basal joints, fulvous beneath; a small lunate yellow spot on each side of the face at the lower orbit of the eyes. Thorax ovate, very finely punctured; a minute spot on each side of the collar, and the tubercles, yellow; metathorax smooth and slightly shining; wings sub-hyaline, the nervures black; the first recurrent nervure uniting with the first transverso-medial nervure; the second recurrent received near the apex of the second submarginal cell; all the calcaria pale testaceous. Abdomen ovate, smooth and shining.

Length, 3 lines.

## Genus—HALICTUS.

*Latreille.*

Ocelli disposed in a curve. Antennæ long, especially in the male; no fossette near the internal superior margins of the eyes. Abdomen

elliptic-oval in the females, nearly cylindrical in the males; a naked linear longitudinal space on the fifth segment. Males larger than the females. Radial cell narrowing from the middle towards the tip; three cubitals, the first nearly as large as the two next together; the second receiving beyond its middle the first recurrent nervure; the third narrowed for more than half its height towards the radial, receiving beyond its middle the second recurrent nervure.

*H. sordidus.* *Smith, Cat. Hymen. Brit. Mus., Pt. I., p. 56 (1853).*

Black; head and disc of the thorax obscurely green, very delicately and closely punctured, the flagellum testaceous beneath; mandibles ferruginous; the base of the metathorax covered with irregular radiating delicate striæ; tegulæ testaceous; wings sub-hyaline, iridescent, nervures ferruginous. Legs dark testaceous, the tarsi palest; the tibiæ and tarsi have silvery glittering pubescence, in some lights partaking of a golden lustre; the floccus silvery white. Abdomen fuscous, oblong-ovate, smooth, shining, and impunctate; anal rima ferruginous; beneath testaceous, the margins of the segments thinly fringed with pale pubescence.

Length,  $2\frac{1}{2}$  lines.

*H. familiaris.* *Smith, Trans. Ent. Soc., 1876, p. 486.*

*Female.* Black; the head and thorax above very closely and delicately punctured, and slightly shining; the clypeus somewhat produced, shining, and with a few strong punctures; the tips of the mandibles rufo-testaceous; the flagellum rufo-piceous beneath. Thorax delicately punctured above; the metathorax truncate, with the margins rounded, at the base above finely rugose; wings hyaline, iridescent, with the stigma and nervures testaceous; legs with glittering, silvery-white pubescence, the calcaria pale testaceous. Abdomen oblong-ovate, shining, with the apical margins of the segments narrowly rufo-testaceous; beneath they are fringed with white hairs; the apical portion of the abdomen with a thin, short, white pubescence, which becomes dense at the sides of the anal rima.

Length,  $2\frac{3}{4}$  lines.

### SUB-ORDER—FOSSORES.

Neuters, if any, winged. Basal joint of the posterior tarsi cylindrical. Females armed with a sting. Burrow in rotten wood, sand-banks, or construct mud or paper nests. Larvæ often feed on insects, &c., provided by the mother.

Antennæ scarcely longer than the head. *Crabronidæ*.

Antennæ much longer than the head.

Posterior tibiæ spinose or toothed. *Pompilidæ*.

Posterior tibiæ not spinose. *Thynnidæ*.

#### FAMILY—CRABRONIDÆ.

Mandibles not notched interiorly. Labium short, either dilated at its extremity, or composed of three equal divisions. Maxillary palpi six-jointed; labial palpi four-jointed. Antennæ shorter than the head and thorax. Fore wings narrow.

A. Abdomen ovoid-conical; head moderate.

Middle tibiæ with a single spine at the apex. *Larrinæ*.

Middle tibiæ with two spines at the apex. *Nyssoninæ*.

B. Abdomen oval or elliptical; head large. *Crabroninæ*.

#### Sub-Family — LARRINÆ.

#### Genus—TACHYTES,

*Panzer*.

Head transverse, wider than the thorax; the mandibles large, arcuate and acuminate, within bidentate, deeply emarginate on the exterior towards the base, or notched, forming a dentate process. Thorax ovate; the prothorax almost concealed beneath the convex gibbosity of the mesothorax; metathorax short, *rounded at the sides, gradually declined above to the apex, not sharply truncated, as broad as long*; the superior wings with one marginal cell, more or less *rounded at the apex, not truncated*; three submarginal cells, the second receiving both recurrent nervures. Abdomen short, ovate-lanceolate, subsessile, not longer than the thorax, usually subdepressed above; the apical segment with the disc flat, the margins reflexed.

T. NIGERRIMUS. *Smith, Cat. Hymen. Brit. Mus., Pt. IV., p. 302*  
(1856).

*Female*. Intensely black and shining, the face with a thin silvery pubescence; the clypeus rounded anteriorly and emarginate in the middle. The mesothorax and scutellum sparingly and delicately punctured; the metathorax truncate behind, finely shagreened and opaque; the truncation transversely striated, the sides obliquely so; the wings hyaline, the nervures black, the marginal cell without an appendage at the apex, having merely a fuscous line. Abdomen short and conical, very smooth and shining.

Length,  $5\frac{1}{2}$  lines.

*T. SERICOPS.* *Smith, Cat. Hymen. Brit. Mus., Pt. IV., p. 302 (1856).*

*Female.* Black; the head and thorax covered with short cinereous pubescence, the face covered with silvery pubescence; the anterior margin of the clypeus rounded; the tips of the mandibles rufo-piceous. The wings hyaline, the nervures rufo-fuscous, the marginal cell truncate at the apex; the hinder margin of the tegulæ pale testaceous; the legs have a changeable silvery pubescence. The abdomen with a brilliant silvery pile, most dense on the apical margins of the segments.

Length,  $3\frac{1}{4}$  lines.

*T. DEPRESSUS.* *Saussure, Reise der "Novara," Hymen., p. 70 (1867).*

Intense black, much depressed, smooth and impunctate; wings hyaline, the veins black.

Length, .35 inch.

### Genus—PISON.

#### *Spin.*

Mandibles without teeth. Head as broad as the thorax; three ocelli in a triangle. Thorax short, oval; scutellum moderate; wings normal; one radial, three cubitals, the second petiolate; three complete discoidals; the first recurrent nervure received at the junction of the first and second cubitals; the second at the junction of the second and third cubitals. Anterior tarsi without any stiff hairs; posterior tibiae and tarsi without hairs or lateral spines. Abdomen oval, short, scarcely peduncled.

*P. MOROSUS.* *Smith, Cat. Hymen. Brit. Mus., Pt. IV., p. 317 (1856).*

*Female.* Jet-black; the face with a little silvery pubescence, the head opaque. The mesothorax very delicately and closely punctured; an abbreviated shining raised line on each side over the tegulæ; the metathorax obliquely strigose, the central channel slightly impressed, the striæ uniting and crossing it; the truncation transversely rugose, its margin slightly rounded; the wings hyaline, their apical margins slightly fuscous, the two recurrent nervures uniting with the nervures of the petiolated submarginal cell. Abdomen smooth and shining; the margins of the segments slightly depressed.

Length, 4 lines.

*P. TUBERCULATUS.* *Smith, Trans. Ent. Soc., 1869, p. 296.*

*Male.* Head and thorax opaque black, the abdomen shining. Head: the face below the insertion of the antennæ with silvery

pubescence; the anterior margin of the clypeus produced into a central acute tooth. Thorax: a thin silvery pubescence on the sides and beneath; the metathorax rounded, obliquely rugulose above, and transversely, more coarsely so behind; wings fusco-hyaline, darkest at their apical margins. Abdomen smooth and shining, the apical margins of the segments depressed; the silvery fascia probably obliterated; beneath, the second, third, and fourth segments have two minute tubercles in the middle near their apical margins; those on the third segment are most prominent.

Length, 3 lines.

New Zealand (British Museum).

Sub-Family—NYSSONINÆ.

Genus—GORYTES.

*Latreille.*

Antennæ of the female in an elongated, obtuse mass, as long as the head and thorax together; antennæ of the male filiform, longer than the head and thorax together; all the joints from the third reniform, nearly equal, the tenth entire without a notch. Pulvilli small in both sexes. Posterior tibiæ without spines. Third cubital cell narrow, the fourth nearly complete.

*G. CARBONARIUS.* *Smith, Cat. Hymen. Brit. Mus., Pt. IV., p. 366* (1856).

*Female.* Jet-black, shining and delicately punctured; the face, cheeks, sides of the thorax, and base of the abdomen with a thin black pubescence. The anterior tarsi ciliated; the mesothorax has an abbreviated slightly-impressed line in the centre of its anterior margin, and a similar one on each side; an impressed line on each side over the tegulæ; the suture at the scutellum consute; the metathorax smooth; the enclosed space at the base of the metathorax with a central abbreviated impressed line at the base. Wings smoky-hyaline, the nervures black. Abdomen: the margins of the segments slightly depressed; beneath, the second segment abruptly produced at the base.

Length,  $4\frac{1}{2}$  lines.

The *Male* only differs in having the antennæ longer, and the abdomen more strongly punctured.



## Sub-Family—CRABRONINÆ.

## Genus—RHOPALUM.

*Kirby.*

Three ocelli in a triangle; radial cell with an open appendage. Coxæ of the posterior legs much shorter than the femora; the posterior tibiæ long and armed with strong spines; tarsi simple. Antennæ of the male filiform, apparently thirteen-jointed; the third, fourth, fifth, and sixth long, strongly notched at the base, toothed at the extremity.

*R. CARBONARIA.* *Smith, Cat. Hymen. Brit. Mus., Pt. IV., p. 424* (1856); *Trans. Ent. Soc., 1876, pl. IV., f. 7.*

*Female.* Black: the head and thorax slightly shining; the clypeus covered with silvery pubescence. Thorax: the lateral angles of the collar produced and acutely margined; at the sides, immediately beneath the raised margin, is a fossulet; the collar above has sometimes two slightly raised tubercles; the mesothorax smooth, with an abbreviated impressed line on each side, rather before the tegulæ; the impressed line at the margins of the scutellum simple, that at the base of the metathorax consute; the metathorax smooth and shining, with a deeply impressed line down the centre, which expands into a broad fossulet at the apex; at the sides a little griseous pubescence; the wings hyaline, the nervures ferruginous, the costal nervure black; the tegulæ testaceous; the apical joints of the tarsi testaceous. Abdomen highly polished, smooth and shining; the fourth segment pubescent; its apical margin fuscous; the apical segment punctured and sprinkled with pale hairs, its margins raised.

Length, 6 lines.

*R. PERFORATOR.* *Smith, Trans. Ent. Soc., 1876, p. 483.*

*Female.* Black and shining, the legs variegated with yellow. Head very closely and finely punctured; an impressed line runs from the anterior ocellus to the antennæ; the clypeus covered with bright silvery pubescence; the mandibles and scape of the antennæ yellow, the latter sometimes with more or less of black behind. Thorax closely and very finely punctured; the metathorax with a deep longitudinal central channel; the enclosed triangular space at its base impunctate; the space beyond smooth, and with only a few very delicate punctures; just above the insertion of the abdomen a few transverse striæ; the sides with a little silvery-white pubescence; wings sub-hyaline, darkest towards their apex; the post-

scutellum yellow, sometimes two yellow spots on the scutellum; the anterior femora, except at the base, the tibiae, the basal and apical joints of the tarsi, yellow; the middle legs with the apical half of the femora beneath, the tibiae at the base and more or less in front, and the base of the first joint of the tarsi, yellow; the posterior tibiae clavate, and with a few spines on the outer margin of the club yellow at their base. Abdomen clavate, smooth and shining; the apical segment punctured and margined laterally.

Length,  $4\frac{1}{2}$ –6 lines.

*Male.* Very like the female; differs in having the flagellum fulvous beneath, beyond the second joint; in other respects the same.

The second and third segments of the abdomen are sometimes more or less ferruginous.

R. ALBIPES. *Smith, Trans. Ent. Soc.*, 1878, p. 7.

*Male.* Black; with the posterior tarsi white. Head subquadrate, a little wider than the thorax, and slightly shining; the clypeus with silvery-white pubescence; the scape of the antennae yellow in front; an impressed line runs from the anterior ocellus to the insertion of the antennae. Thorax slightly shining; the scutellum, and the enclosed space at the base of the metathorax, *very finely punctured*, the latter with a central impressed line, which unites with a deep fossulet that extends to the apex of the metathorax, the sides of which have a thin white pubescence; the tubercles yellow; the wings hyaline, the nervures testaceous, with the costal and the stigma brownish-black; the tips of the anterior and intermediate femora, the tibiae, and tarsi pale rufo-testaceous, the tibiae with a dark stain in the middle, the claw-joint of all the tarsi rufo-piceous; the posterior tibiae clavate, white at their base, as well as the second, third, and fourth joints of the tarsi. Abdomen smooth and shining; the petiole clavate.

Length,  $4\frac{1}{4}$  lines.

Dunedin.

#### FAMILY—POMPILIDÆ.

Prothorax arcuate in front of the wings, then almost square or narrowed. Posterior legs at least as long as the head and thorax together. Antennae long generally; convolute, especially in the females. Wings broad.

#### Genus—POMPILUS.

*Latreille.*

Anterior tarsi not toothed nor pectinate; often ciliate. Posterior tibiae toothed. One radial (marginal) cell pointed at the apex; four

cubitals, of which the three first are complete, the fourth often nearly complete; the second receives the first recurrent nervure; the third receives the second, and is generally strongly narrowed towards the radial.

P. FUGAX. *Fabricius, Syst. Ent.*, 1775, p. 350; *Syst. Piez.*, p. 194 (*Sphex*). *S. nitida*: *Fabr., Syst. Ent.*, p. 351; *Syst. Piez.*, p. 195.

Head and thorax covered with golden tomentum. Antennæ porrect, black. Abdomen ferruginous. Wings yellowish, sometimes (especially in the males) with a brown fascia; the apex sub-hyaline. Legs ferruginous.

Length,  $6\frac{1}{2}$  lines.

New Zealand and Australia (?).

P. MONACHUS. *Smith, Cat. Hymen. Brit. Mus.*, Pt. III., p. 164 (1855).

*Female*. Jet-black; shining, head and thorax thinly scattered over with black pubescence; wings smoky-hyaline, splendidly iridescent; the third submarginal cell elongate, widest at its apex, twice the width of the second cell.

Length,  $6\frac{1}{2}$ –9 lines.

### Genus—PRIOCNEMIS.

*Dahlb.*

Superior wings with one elongate marginal cell and three submarginal cells; the first recurrent nervure uniting with the second transverso-cubital nervure; the second recurrent nervure entering the second submarginal cell about one-third from its base; the legs strongly serrate or spinose, the claws having a tooth beneath more or less developed, in some species as stout as the claws themselves.

P. CONFORMIS. *Smith, Trans. Ent. Soc.*, 1876, p. 482.

*Female*. Head and thorax black; abdomen ferruginous. The head covered with short fine golden pubescence, which is most dense and bright on the face; the apical half of the mandibles ferruginous; the palpi pale ferruginous; the antennæ black. Thorax covered with short bright-golden pubescence; the metathorax rounded; the coxæ, trochanters, and two apical joints of the tarsi black; wings pale fulvo-hyaline, pale fuscous from the stigma to the apex, the cloud crossing both wings; the nervures ferruginous towards the base and fuscous at the apex of the wings. Abdomen smooth and shining, with the extreme base black.

Length, 4 lines.

*Male.* Rather smaller than the female, similar in colour and pubescence, but more slender; the fourth and following segments black.

*P. MARGINATUS.* *Smith, Trans. Ent. Soc., 1876, p. 483, pl. IV., f. 2.*

*Female.* Head and thorax black; abdomen ferruginous. The head clothed with short decumbent golden pubescence; a central ovate spot on the clypeus and the mandibles ferruginous, the latter black at their apex; the spot on the clypeus varies in shape, sometimes being angular or transverse; the antennæ black. Thorax clothed with a similar pubescence to the head, but usually more or less abraded on the disc; the legs ferruginous, with their coxæ black and covered with a thin golden pile; the claw-joints of the tarsi black; wings fulvo-hyaline, the nervures pale ferruginous; the apex of the wings with a broad dark-fuscous border extending to the middle of the marginal cell and crossing both wings, but with a hyaline incision at the lower margin of the third discoidal cell. Abdomen smooth and shining. Length,  $4\frac{1}{4}$ – $6\frac{3}{4}$  lines.

*Male.* Only differs in being more slender, the antennæ not being convolute; the spot on the clypeus obsolete; the dark margin of the wing not incised; the fourth and following segments black. Length,  $4\frac{1}{2}$  lines.

West coast of the South Island.

*P. MACULIPENNIS.* *Smith, Trans. Ent. Soc., 1876, p. 482.*

*Female.* Head and thorax black; abdomen and legs ferruginous. The front covered with golden pile; the anterior margin of the clypeus, the three basal joints of the antennæ, the palpi, and mandibles ferruginous; the palpi pale; the base of the mandibles, and tips of the joints of the antennæ, black. The thorax covered with short decumbent golden pubescence, usually more or less abraded on the mesothorax, and thin and sparing on the pectus; wings fulvo-hyaline, the nervures pale ferruginous; the stigma black, from which a pale fuscous fascia crosses the wings to the middle of the third discoidal cell; the claw-joint of the tarsi black; the legs very slightly spinose; those on the posterior tibiæ very short, fine, and placed in rows at the side of a slightly-raised longitudinal carina. Abdomen smooth and shining.

Length, 5 lines.

Peel Forest, Canterbury.

*P. DILIGENS.* *Smith, Trans. Ent. Soc., 1876, p. 483, pl. IV., f. 3.*

*Female.* Black; the legs ferruginous. Head smooth, slightly

shining, very minutely and delicately punctured, an impressed line running from the anterior ocellus to the insertion of the antennæ; the front thinly covered with golden pile; the mandibles ferruginous beyond the middle, with the apex black. Thorax slightly shining; the sides and the metathorax with a thin faintly-golden pile, frequently obliterated on the metathorax. Wings fulvo-hyaline, but fuscous beyond the stigma; the nervures pale ferruginous at the hyaline portion of the wings; the claw-joints of the tarsi black; the coxæ black. Abdomen smooth and shining, with the extreme apex ferruginous.

Length,  $5\frac{1}{2}$ –6 lines.

Var.  $\beta$ . The abdomen with irregular ferruginous stains.

Peel Forest, Canterbury.

P. NITIDIVENTRIS. *Smith, Trans. Ent. Soc., 1878, p. 6.*

*Female.* Jet-black; the abdomen smooth, shining, and impunctate. The head very finely and closely punctured, with large shallow punctures thinly interspersed; a little cinereous pubescence on the sides of the face below the antennæ; the anterior margin of the clypeus rounded; the tips of the mandibles ferruginous. The thorax *very delicately* punctured; the legs, with the spines at the apex of the tibiæ, black, and the tips of the claws of the tarsi rufo-piceous; the wings hyaline, the nervures black. Abdomen smooth and shining, with the apical segment, except its extreme base, finely rugose and opaque.

Length,  $4\frac{1}{2}$  lines.

Dunedin.

#### FAMILY—THYNNIDÆ.

Thorax arched in front. Maxillary palpi short, joints sub-similar. Legs short, slender, not spinose, nor strongly ciliated. Antennæ of both sexes at least as long as the head and thorax together. Body generally naked. Both sexes with wings.

#### Genus—RHAGIGASTER.

*De Saussure.*

*Male.* Abdomen slender, elongated; apex armed below with a long compressed recurved spine; the first segment with a compressed tubercle below. Front generally transversely keeled. Clypeus truncated at the apex. Labium almost hidden.

*Female.* Body slender. Head depressed, with a longitudinal impression on both sides behind the eyes. Thorax flat above; meta-

notum rather elongated, flat above, quadrate, truncated behind. Abdomen elongated, polished, apex normal, roundly depressed; claws forked.

R. NOVARÆ. *Saussure, Reise der "Novara," Hymen., p. 112 (1867).*

*Male.* Black, shining, with grey down; clypeus and front with a forked keel, front with a thin transverse keel above. Wings smoky-hyaline, bluish.

Length, .46 inch.

### SUB-ORDER—HETEROGYNA.

Males, females, and neuters; the latter sometimes of two kinds, workers and soldiers. Females armed with a sting. Social; build nests, and excavate tunnels.

#### FAMILY--FORMICIDÆ (ANTS).

Tongue rounded, arched, almost spoon-like, shorter than the head. Males winged. Females winged at first, losing their wings after coupling. Neuters wingless. Antennæ quivering, those of the females especially getting rather bigger towards the tip; first joint nearly one-third of the whole antenna; the second obconical, almost as long as the third. Labrum of the neuters, large, horny, falling perpendicularly under the mandibles.

Peduncle of abdomen with one node.

Neuters with stings. *Ponerinæ.*

Neuters without stings. *Formicinæ.*

Peduncle of abdomen with two nodes.

Workers of one kind only. *Myrmicinæ.*

Workers of two kinds. *Attinæ.*

#### Sub-Family—FORMICINÆ.

Peduncle of the abdomen with a single node. None of the individuals with a sting. Pupæ enclosed in silken cocoons.

#### Genus—FORMICA.

##### *Linneus.*

Maxillary palpi six-jointed; labial palpi four-jointed. Ocelli three, placed in a triangle on the vertex. Males and females winged, constantly so in the former sex, temporarily in the females. The superior wings with one marginal and two submarginal cells; one division having also a complete discoidal cell, another in which it is obsolete.

F. ZEALANDICA. *Smith, Trans. Ent. Soc.*, 1878, p. 6.

*Female.* The abdomen black, the head and thorax blackish-brown, covered with a fine cinereous pile, which is most dense on the abdomen; the mandibles, the scape of the antennæ, and the flagellum at their base and apex pale rufo-testaceous. Thorax ovate, smooth and shining; the metathorax obliquely truncate; the femora rufo-fuscous, with their apex, the tibiæ, and tarsi pale rufo-testaceous; the tibiæ usually more or less fuscous in the middle. Abdomen ovate, shining, and with the margins of the segments very narrowly testaceous; the scape of the petiole ovate and emarginate above.

Length,  $2\frac{1}{2}$  lines.

Dunedin.

#### Sub-Family—PONERINÆ.

Peduncle of the abdomen with a single node; the first segment more or less constricted. Females and workers armed with a sting. Pupæ enclosed in cocoons.

#### Genus—PONERA.

*Latreille.*

Maxillary palpi two-jointed (in the European species), or four-jointed (in most exotic ones); the labial palpi two-jointed; ocelli obsolete in the workers; eyes present in all the sexes (in the European species the workers are destitute of eyes). The scale of the petiole thickened, nodiform; the first segments of the abdomen more or less constricted. Females and workers furnished with a sting. Anterior wings with one marginal, two complete submarginal cells, and one discoidal cell.

P. CASTANEA. *Mayr, Reise der "Novara," Hymen.*, p. 69 (1867).  
*Smith, Trans. Ent. Soc.*, 1876, p. 489.

*Female.* Chestnut-red, usually with the head and metathorax blackish; the mandibles and antennæ reddish, the margin of the former denticulate, and the tips of the joints of the latter fuscous or black; the head shining, very thinly punctured, and covered with a thin sericeous pile. Thorax oblong-ovate and very finely punctured, shining and finely pubescent; legs red, the calcaria pale testaceous. Abdomen smooth and shining, the apex rufo-testaceous, having a thin sericeous pile and a mixture of longer scattered pubescence; the node of the abdomen wedge-shaped, compressed above, with its upper margin rounded. Length,  $3\frac{1}{2}$  lines.

*Worker.* Rather smaller than the female and of a brighter red, but closely resembling that sex; thorax elongate, attenuated at the base of the metathorax, which is as long as the pro- and mesothorax, entirely smooth and shining; the node of the abdomen as in the female; the claws of the tarsi simple in both sexes.

Tairua, near Mercury Bay.

I find that type specimens of *P. castanea* (Smith) agree with Mayr's description in the Voyage of the "Novara."

## Genus—AMBLYOPONE.

*Erichson.*

*Female.* Head subquadrate; antennæ twelve-jointed, the scape subelavate; mandibles straight, toothed in the middle on their inner edge and at their apex; eyes lateral, round, and of medium size; minute in the workers; ocelli three, in a triangle on the vertex, wanting in the workers. Thorax oblong-ovate. Wings: Anterior pair with one marginal and two submarginal cells, the second extending to the apex of the wings. The thorax narrowed posteriorly in the workers. Legs short and stout; claws of the tarsi simple. Abdomen: the node of the peduncle subquadrate-rotund; a deep strangulation between the first and second segments.

*Male.* Head transverse. Antennæ thirteen-jointed; scape short and conical.

A. CEPHALOTES. *Smith, Trans. Ent. Soc., 1876, p. 490.*

*Worker.* Black, with obscure rufo-piceous tints; the mandibles, antennæ, and legs ferruginous. Head more than twice the width of the prothorax, subquadrate with the posterior angles rounded, the anterior margin narrowly obscurely rufo-piceous; a deep central channel anteriorly, extending from the insertion of the antennæ to the middle of the head; longitudinally striated, excepting the central and posterior areas, which are somewhat distantly punctured. Thorax elongate, shining, strangulated in the middle; the prothorax subglobose, and distantly punctured; the mesothorax abbreviated; the metathorax elongate, narrower than the prothorax, the sides nearly parallel, obliquely truncate posteriorly; shining and distantly punctured. Abdomen smooth and shining; the first segment, or node, subglobose; the two following large, the second largest, both very convex and rounded; the apex of the abdomen rufo-piceous.

Length, 4 lines.

Auckland.



## Sub-Family—MYRMICINÆ.

Maxillary palpi one- to six-jointed; labial palpi two- to four-jointed. Ocelli obsolete in the workers. Females and workers armed with stings. Petiole of the abdomen with two nodes. Pupæ usually naked, not enclosed in cocoons, but casting off a thin pellicle on arriving at the imago state.

Thorax unarmed.

Naked. Maxillary palpi four-jointed. *Tetramorium*.

Hairy. Maxillary palpi two-jointed. *Monomorium*.

Thorax armed with teeth. *Orectognathus*.

## Genus—TETRAMORIUM.

*Mayr.*

Maxillary palpi four-jointed; labial palpi three-jointed. Antennæ clavate, the club three-jointed.

*T. STRIATUM.* *Smith, Trans. Ent. Soc., 1876, p. 481.*

*Female.* Black; head nearly as wide as the thorax, and longitudinally striated; the mandibles bidentate, and, as well as the apex of the apical joint of the antennæ, ferruginous; the extreme apex of the scape, and also the base of the flagellum, usually more or less ferruginous. Thorax: longitudinally striated, the base of the metathorax finely transversely so; the metathorax bidentate, with a deep smooth sulcation between; the trochanters, tips of the femora, and the tarsi rufo-piceous. Abdomen smooth and shining, and having a few scattered pale-fulvous hairs; the nodes of the petiole striated. The wings sub-hyaline, the nervures fusco-ferruginous. The thorax oblong-ovate. Length, 4 lines.

*Worker.* Black; sometimes more or less obscurely rufo-piceous; the head smooth and shining; the mandibles and front ferruginous, varying much in the depth of colouring; the apical joint of the antennæ more or less rufo-piceous. Thorax oblong, strangulated in the middle; the prothorax rounded in front, slightly transversely striated above, as well as the metathorax, which is bidentate; the legs more or less brightly fusco-ferruginous. Abdomen smooth and shining, ovate, and with a few scattered pale hairs. Length,  $2\frac{3}{4}$  lines.

*Male.* Black, and shining; the head pubescent, transverse, longitudinally striated, with the eyes prominent. The mesothorax and scutellum longitudinally striated, the former smooth and shining anteriorly; the metathorax shining, and longitudinally sulcate; the wings sub-hyaline, the nervures testaceous. Abdomen: the first node of the petiole clavate and slightly striated; the second also

striated and globose; the abdomen smooth and shining. Length,  $3\frac{1}{2}$  lines.

Peel Forest, west coast of South Island; Dunedin.

*T. NITIDUM.* *Smith, Trans. Ent. Soc., 1876, p. 480.*

*Female.* Black; smooth and shining; mandibles obscurely ferruginous; a longitudinal impressed line in front of the anterior ocellus, which emits a channel to the insertion of each antenna, at about half its length. The thorax oblong-ovate; the metathorax with a central, longitudinal deep sulcation, which is smooth and shining; wings sub-hyaline and iridescent, with the nervures testaceous. Abdomen ovate, smooth, and shining; the first joint of the petiole clavate; the second subglobose. Length,  $3\frac{1}{2}$  lines.

*Worker.* Jet-black, smooth and shining; mandibles ferruginous. Thorax oblong, rounded anteriorly and very convex, compressed posteriorly and strangulated; the metathorax deeply grooved posteriorly and subdentate; the tips of the femora slightly ferruginous. Abdomen ovate, smooth, and shining; the first joint of the petiole clavate, the second globose. Length, 2 lines.

*Male.* Jet-black; smooth and shining. Head sub-opaque, pubescent, and longitudinally striated. The mesothorax with a few abbreviated striæ in front, and, as well as the scutellum and metathorax, smooth and shining; the latter deeply sulcated posteriorly. Wings sub-hyaline and iridescent, with the nervures testaceous. Abdomen, and nodes of the petiole, smooth and shining. Length,  $2\frac{1}{4}$  lines.

Canterbury.

### Genus—MONOMORIUM.

*Mayr.*

Maxillary palpi two-jointed; labial palpi two-jointed.

*M. FULVUM.* *Mayr, Reise der "Novara," Formicide, p. 93, pl. III., f. 25 (1867).*

*Worker.* Fulvous; club of the antennæ brownish; hairy, shining, smooth; thorax punctate on the sides only; clypeus bidentate and emarginate; first joint of the funiculus twice as long as the second.

Length, .14 to .16 inch.

Auckland.

### Genus—ORECTOGNATHUS.

*Smith.*

Head heart-shaped, deeply emarginate behind; mandibles porrect, bifurcate at their apex, near to which is a sharp tooth or spine; eyes

lateral, of moderate size, and composed of a number of circular, convex, separated facets; antennæ inserted forwards on the head, being five-jointed in the workers and females (male unknown). Thorax oblong, much narrower than the head, widest anteriorly, and with a short, acute tooth at the margins of the prothorax; the mesothorax has also a small lateral tooth; the metathorax with two acute spines; legs simple. Abdomen ovate, and binodose; the first node petiolated and clavate, the second globose.

O. PERPLEXUS. *Smith, Trans. Ent. Soc.*, 1876, p. 491.

*Female.* Pale ferruginous, the head closely and finely punctured; antennæ and mandibles paler than the head. Thorax shorter and narrower than the head; the prothorax rounded in front; the scutellum with the hinder margin rounded, somewhat projecting over the metathorax, which is armed with two compressed, acute spines; the entire thorax closely and finely punctured; the legs paler than the thorax; the anterior tibiæ with a spine at their apex, the intermediate and posterior pair simple. Abdomen slightly ovate, nearly globose; the first node petiolated and rounded, the second semi-globose, forming apparently the base of the abdomen. Length,  $1\frac{1}{4}$  lines.

*Worker.* The same size as the female, differing principally in the form of the thorax, the anterior margin of the prothorax being rounded; the sides oblique, the upper surface being kite-shaped, and posteriorly truncate, the angles of the truncation being armed with a spine; closely and finely punctured above; the legs and abdomen as in the female.

Mercury Bay.

O. ANTENNATUS. *Smith, Trans. Ent. Soc., N.S., Vol. II., p. 228, pl. 21, f. 9 (Jan., 1854).*

*Worker.* Pale rufo-testaceous; the mandibles armed at their extremity with two long spines or teeth, the upper one simple, the lower one forked at the apex; the anterior angles of the thorax have a short acute spine, a second short one is situated about the middle at the sides, and the metathorax is armed with two longer slender acute spines; legs elongate, very pale testaceous. Abdomen nearly rotundate, slightly flattened; the first node elongato-clavate, the second globose.

New Zealand (British Museum).

#### Sub-Family—ATTIDÆ.

The number of joints in the maxillary palpi varying from four to two, those of the labial palpi from three to two; the ocelli usually

obsolete in the workers, some species of the large workers furnished with a single ocellus; the petiole of the abdomen formed of two nodes; females and workers with a sting. The colonies of the different genera and species consisting of males, females, large and small workers; the large workers with enormously-enlarged heads, those of the small workers of the ordinary size.

### Genus—ATTA.

*St. Farg.*

Maxillary palpi four-jointed; labial palpi three-jointed; antennæ twelve-jointed in the female and worker, thirteen-jointed in the male. Wings longer than the body, with one marginal and three submarginal cells, the third sometimes incomplete; the second submarginal cell bell-shaped, the nervure at its apex uniting with that at the base of the marginal cell. Abdomen with two nodes in the petiole. The large workers usually with enormously-developed heads; the small workers with heads of the ordinary size.

A. ANTARCTICA. *Smith, Cat. Hymen. Brit. Mus., Pt. VI., p. 167 (1858).*

*Female.* Ferruginous. Head narrower than the thorax; the antennæ dark fusco-ferruginous, with the basal joints of the flagellum and the apex of the scape ferruginous. Thorax: a black stripe on each side of the disc of the mesothorax, and an abbreviated central one in front; the sutures of the scutellum, post-scutellum, and a patch on each side of the pectus, black; the legs more or less nigropiceous, with the articulations and the tarsi pale. The abdomen with a black fascia on the apical margins of all the segments.

Length,  $3\frac{1}{2}$  lines.

### SUB-ORDER—PUPIVORA.

Abdomen petiolated; in the female armed with a borer. Trochanter bi-annulate. Larva without feet. The females deposit their eggs in the larvæ or pupæ of other insects.

Abdomen attached to the metanotum. *Evaniidæ.*

Abdomen attached to the end of the metathorax.

a. Veins of the wings well marked.

First subcostal united to median cell. *Ichneumonidæ.*

First subcostal separated from median cell. *Braconidæ.*

b. Veins of wings nearly obsolete. *Proctotrupidæ.*

## FAMILY—EVANIIDÆ.

Ovipositor straight; the abdomen attached to the metanotum; the antennæ straight, thirteen- or fourteen-jointed.

## Genus—FÆNUS.

*Fabricius.*

Body long and narrow; the abdomen compressed, thicker at the extremity. Head semi-oval, flattened below; the prothorax narrowed into a neck. Antennæ, at the most, as long as the head and thorax, thicker in the males than in the females; thirteen-jointed in the males and fourteen-jointed in the females. Fore wings with a radial cell which reaches nearly to the tip of the wing; two large cubitals, of which the first is rhomboidal; three discoidals, of which the exterior is very large, the other two very small, especially the anterior, which is linear; and a posterior marginal. Posterior legs longer and stronger than the others; the first joint of the tarsi much longer than the others.

F. CRASSIPES. *Smith, Trans. Ent. Soc.*, 1876, p. 479.

*Female.* Black; the abdomen variegated with sericeous-grey pile. Head subglobose, the front covered with a thin silvery-white pubescence; the anterior margin of the face and clypeus, and also the tips of the mandibles, ferruginous; the latter bidentate at the apex, and having a strong acute tooth towards their base on the inner margin. Thorax: the mesothorax transversely striated, with two oblique ferruginous sutures that meet at the scutellum, the latter subrugose; the hinder margin of the prothorax with a fringe of silvery-white pubescence; the wings hyaline and iridescent, the nervures black, the stigma pale testaceous; the femora and tibiæ ferruginous beneath, as well as the intermediate and posterior coxæ; the posterior legs incrassate, their tibiæ being clavate; all the tarsi ferruginous. Abdomen clavate, and covered with silvery-grey pile, the apical margins of the segments rufo-piceous, the abdomen having a tessellated appearance.

Length, 5 lines.

F. UNGUICULARIS. *Smith, Trans. Ent. Soc.*, 1876, p. 480, pl. IV., f. 8.

*Female.* Black; the abdomen tessellated with sericeous-grey pile. Very like the preceding species, from which it differs in being rather larger, the abdomen more elongate, and much more attenuated at the base; the anterior margin of the face and clypeus not ferruginous. The mesothorax not so strongly striated, and the oblique sutures not at

all, or very faintly, ferruginous; the wings have the nervures blacker, the stigma is also darker; the legs resemble those of *F. crassipes*, but the claws of the posterior tarsi are long and curved, being twice as long as in that species; they are ferruginous.

Length,  $5\frac{1}{2}$  lines.

The *Male* closely resembles the female; but its legs are black; the abdomen elongate, and only slightly clavate; the legs are also more slender.

#### FAMILY—BRACONIDÆ.

Antennæ long, multiarticulate. The first subcostal cell separated from the first median, and lying just behind it; the second subcostal generally large; only one recurrent vein. Abdomen attached to the end of the metathorax.

#### Genus—RHOGAS.

*Nees.*

Clypeus deeply excavated. First subcostal cell completely formed behind, wanting the recurrent nerve; the second cell long and four-sided; the three first abdominal segments long, forming a slender petiole, nearly equal; second and third divided by a furrow, the rest very small. Borer very short.

R. PENETRATOR. *Smith, Trans. Ent. Soc., 1878, p. 5.*

*Female.* Black, with the anterior and intermediate legs pale testaceous-yellow. The antennæ as long as the body; the front and the mandibles obscurely ferruginous, as is also the thorax above; the three longitudinal lobes of the mesothorax black; the scutellum and greater portion of the metathorax also black, the apex of the latter ferruginous; the metathorax rugose; wings hyaline and iridescent, the nervures and stigma black; the anterior and intermediate legs with the coxæ black, and also the claw-joint of the tarsi; the posterior coxæ very large, and transversely rugose. Abdomen smooth and shining; the ovipositor about as long as the insect.

Length, 3 lines.

Dunedin.

#### FAMILY—ICHNEUMONIDÆ.

Ovipositor straight; the abdomen attached at the extremity of the metathorax; first subcostal cell united to the median cell; the second small or wanting. The antennæ not elbowed, with more than sixteen joints (except in very minute species).

- A. Abdomen petiolate.
  - a. Abdomen rounded.
    - Ovipositor short. *Ichneumoninae*.
    - Ovipositor long. *Cryptinae*.
  - b. Abdomen compressed at the extremity. *Ophioninae*.
- B. Abdomen subsessile; ovipositor not exerted. *Tryphoninae*.
- C. Abdomen sessile; ovipositor long. *Pimplinae*.

#### Sub-Family—ICHNEUMONINÆ.

Abdomen short, petiolate; ovipositor very short.

#### Genus—ICHNEUMON.

*Linnaeus*.

Antennæ setaceous, generally convolute in the females; the first joint generally notched outside. Anterior wings with an areolet, which is generally pentagonal. The middle nervure is rather angulated, and provided with a rudimentary accessory nervure. Legs medium, the thighs more or less thickened; the fourth joint of the tarsi is shorter than the others, and entire. Body elongated, narrower in the males than in the females. Scutellum not projecting.

\* *Abdomen black and red*.

I. LOTATORIUS. *Fabricius, Syst. Ent.*, 1774, p. 330.

Antennæ convolute, black. Thorax black, spotted with yellow under the wings; scutellum yellow. Abdomen black, shining; the second segment altogether red. Legs red.

I. INSIDIATOR. *Smith, Trans. Ent. Soc.*, 1876, p. 476.

*Male*. Black; a yellow spot on each side of the face, and a smaller one beneath the insertion of each antenna; the palpi flavo-testaceous; the flagellum fulvous beneath; sometimes a fulvous spot on the scape beneath. Thorax: the scutellum, tegulæ, and an oblong spot beneath them, yellow; wings fulvo-hyaline, the nervures and stigma pale ferruginous; the legs flavo-rufous, the tibiæ and tarsi palest; the extreme apex of the posterior femora and tibiæ fuscous. Abdomen: the apical margin of the basal segment, and the second and third segments, flavo-rufous.

Length, 6–7 lines.

Var. *β*. The minute spots on the face, beneath the scape of the antennæ, frequently obsolete.

Very probably the male of the last.

I. CONSANGUINEUS. *Smith, Trans. Ent. Soc.*, 1876, p. 476.

*Male.* Black; the flagellum of the antennæ fulvous beneath. Thorax: a transverse yellow line beneath the wings; the stigma and nervures of the wings ferruginous; the wings pale fulvo-hyaline; the legs fulvo-ferruginous; the coxæ, trochanters, and tips of the posterior femora and tibiæ black. Abdomen: the second and third segments fulvo-ferruginous.

Length, 6–7 lines.

I. INVECTUS. *Smith, Trans. Ent. Soc.*, 1876, p. 475.

*Female.* Black; mandibles ferruginous towards their apex, the palpi pale rufo-testaceous. Thorax shining; the mesothorax with a few very fine scattered punctures; the scutellum and post-scutellum ferruginous; wings fulvo-hyaline, the nervures pale ferruginous; the legs fulvo-ferruginous, rather stout, with the coxæ and trochanters black. Abdomen shining, impunctate, with the two basal segments fulvo-ferruginous; the base of the petiole black.

Length, 5–5½ lines.

I. SOLLICITORIUS. *Fabricius, Syst. Ent.*, 1774, p. 332.

Antennæ porrect, black. Head black, the front yellow. Thorax black, unspotted; the scutellum yellow. Abdomen black, the first three segments red. Legs red.

I. CONSPIRATUS. *Smith, Trans. Ent. Soc.*, 1876, p. 475.

*Female.* Ferruginous, with the apex of the abdomen black. Head: a black or dusky spot on the face on each side of the clypeus; the antennæ fuscous above. Thorax: two narrow lines on the mesothorax anteriorly; the scutellum, post-scutellum, and two spots on the metathorax, yellow; the mesothorax and head closely and rather strongly punctured, the metathorax smooth and shining; the wings fulvo-hyaline, their nervures rufo-testaceous; legs ferruginous, of a lighter red than the thorax; the posterior coxæ greatly swollen and yellow above. Abdomen smooth and shining, with the three basal segments red, the rest black.

Length, 4½ lines.

I. PERFIDIOSUS. *Smith, Trans. Ent. Soc.*, 1876, p. 475, pl. 4, f. 5.

*Male.* Head and thorax black; abdomen red, with the apex black. Head: a triangular yellow spot at the inner orbit of the eyes opposite the anterior ocellus; the clypeus, mandibles, and palpi ferruginous, the latter palest; usually a minute ferruginous spot on the scape in



front, sometimes obsolete. Thorax: the lateral margins of the prothorax, the scutellum, post-scutellum, sometimes a spot also on the disc of the mesothorax, yellow or reddish-yellow; two ovate yellow spots beneath the wings; occasionally a reddish spot on the meta-thorax in the enclosed horseshoe-shaped space at its base; wings slightly fulvo-hyaline, the nervures fuscous, the stigma and nervures at the base of the wings pale ferruginous; legs pale ferruginous, with the coxæ and trochanters black. Abdomen smooth and shining, with three, but sometimes four, of the basal segments ferruginous.

Length, 6–7 lines.

Var.  $\beta$ . The fourth segment more or less red.

\*\* *Abdomen red.*

I. PLACIDUS. *Smith, Trans. Ent. Soc., 1876, p. 476.*

*Female.* Ferruginous, with the head and thorax more or less black. Head black, the orbits of the eyes white; the clypeus, cheeks, and scape in front ferruginous; the mandibles white. Thorax smooth and shining; the prothorax above, and the anterior portion of the mesothorax, black; the margin of the prothorax, two longitudinal stripes on the mesothorax, the scutellum and post-scutellum, white; wings fulvo-hyaline, the nervures pale rufo-testaceous; the legs ferruginous, with a white spot on the coxæ above, also a longitudinal white line beneath the wings. Abdomen smooth and shining.

Length, 4 lines.

I. EXHILARATUS. *Smith, Trans. Ent. Soc., 1876, p. 477.*

*Male.* Ferruginous, and variegated with yellow. Head: the front, below the antennæ, the mandibles and scape in front, yellow; the flagellum and scape behind black. Thorax: the scutellum, post-scutellum, and tegulæ, yellow; wings fulvo-hyaline, with the nervures black, the latter pale ferruginous at the base of the wings; the anterior and intermediate legs yellow, with their coxæ ferruginous; the posterior femora, trochanters, and coxæ ferruginous, tibiæ and tarsi yellow. Abdomen ferruginous, with the basal segment yellow.

Length,  $6\frac{1}{2}$  lines.

I. DECEPTUS. *Smith, Trans. Ent. Soc., 1876, p. 477.*

*Female.* Head and thorax black; abdomen ferruginous. The inner orbits of the eyes above the antennæ, and sometimes a spot on each side of the clypeus, close to the eyes, yellow, the latter spot frequently obsolete; the scape in front and mandibles ferruginous.

Thorax : the lateral margins of the prothorax more or less yellow ; two ovate spots beneath the wings, the scutellum and post-scutellum, and a spot on the posterior coxæ above, yellow, the latter sometimes obsolete ; wings flavo-hyaline, the nervures fusco-testaceous ; the inferior margin of the stigma, and the nervures at the base of the wings, pale ferruginous ; occasionally a yellow spot on the disc of the thorax ; legs ferruginous, the coxæ being more or less black. Abdomen ferruginous, impunctate, smooth and shining, sometimes a little inclined to become fuscous towards the apex.

Length,  $6\frac{1}{2}$ –7 lines.

This is a variable insect : in some examples there is a yellow or ferruginous spot on the metathorax, situated in the horseshoe-shaped enclosed space ; other specimens have the two apical segments of the abdomen black, or more or less so ; a series of examples present other slight variations.

### Genus—MESOLEPTUS.

*Gravenhorst.*

Peduncle of abdomen narrow. Legs slender and elongated. Antennæ setaceous, more or less convolute in the females. Anterior wings with a small, triangular areolet, generally irregular, often petioled, sometimes incomplete. Abdomen smooth, shining, with a long petiole ; ovipositor not exerted.

M. MÜLLER. *Butler, Voy. "Ereb." and "Terror," Ins., p. 27.*

Head black ; mouth orange ; antennæ long, black ; thorax black ; abdomen glossy, orange-tawny ; basal two-thirds of first segment black ; legs orange-tawny ; wings hyaline, with green and rosy reflections ; costal stigma black.

Length,  $5\frac{1}{2}$  lines.

Christchurch (Wakefield).

Parasitic upon *Cacæcia gallicolens*.

The scutellum and post-scutellum are black, like the rest of the thorax.

### Sub-Family—CRYPTINÆ.

Abdomen narrowly petiolate, elongate ; ovipositor long.

### Genus—MESOTENUS.

*Gravenhorst.*

Antennæ as long as or longer than the body ; in the males setaceous, the joints much longer than broad, except some of the last, which are

almost as broad as long; in the females sometimes like the males, sometimes getting larger toward the tip. Front wings with the median nervure a little arched and slightly flexuose; *the areole very small*, quadrangular, sometimes closed, sometimes open outwardly. Legs slender, and rather elongated; the last pair strong, the thighs often a little arched inside. Body long and narrow; the ovipositor rarely longer than the abdomen, generally shorter.

M. ALBO-PICTUS. *Smith, Trans. Ent. Soc.*, 1876, *p.* 477, *pl.* IV., *f.* 1.

*Female.* Black, variegated with white lines and spots; legs ferruginous, black, and white. Head: orbits of the eyes white, interrupted at the vertex; the front below the antennæ and the palpi white; joints 8–12 of the antennæ white, sometimes the thirteenth also. Thorax: a line on each side of the prothorax, five large maculæ on the sides of the mesothorax beneath the wings, a subquadrate one on the sides of the metathorax, white; a spot on the mesothorax above, the scutellum and post-scutellum, and a large trilobate spot at the apex of the metathorax, white; wings hyaline, the nervures black. Legs ferruginous; the anterior tibiæ swollen; the anterior coxæ white, the intermediate pair sometimes more or less so, and also the posterior tarsi, the base and apex of the latter black; the tips of the posterior femora and apical half of the posterior tibiæ black. Abdomen: the apical margin of all the segments white.

Length, 5–7 lines.

*Male.* This sex closely resembles the female, and has joints 13–19 of the antennæ white.

North Island.

## Genus—CRYPTUS.

### *Fabricius.*

Antennæ long, setaceous, the first joint broadly notched outside or above. Legs rather long. Wing with *the areole pentagonal or sometimes almost quadrate*. Abdomen broad in the females, long and narrow in the males. Ovipositor about the length of the body.

C. DECORATORIUS. *Fabricius, Syst. Ent.*, 1774, *p.* 333; *Syst. Piez.*, *p.* 78.

Small. Antennæ porrect, black. Body obscurely ferruginous; scutellum yellow; the last segment of the abdomen with a black fascia. Wings hyaline, yellowish.

C. PENETRATOR. *Smith, Trans. Ent. Soc.*, 1878, p. 2.

Head and thorax black; legs and abdomen ferruginous. The orbits of the eyes slightly interrupted at their summit; the anterior margin of the clypeus and the mandibles yellow; a ferruginous spot on the scape of the antennæ in front. Thorax: the margins of the prothorax and the tegulæ yellow; the anterior and intermediate coxæ and trochanters yellow in front; wings sub-hyaline and iridescent; the stigma ferruginous. Abdomen smooth and shining; the apical margin of the first segment yellow.

Length, 4 lines.

Dunedin.

#### Sub-Family—OPHIONINÆ.

Abdomen petiolate, compressed at the extremity.

#### Genus—OPHION.

*Fabricius.*

Antennæ setaceous, as long as the body, the joints rather longer than broad, and obliquely truncated. *Wings without an areole*; the large cell receives on its posterior nervure (or the middle nervure) the two recurrent nervures. Legs slender. Abdomen compressed and sharp from the third segment; the two first segments, and especially the first, are broader behind than in front. The ovipositor is so short that the sexes are not easily recognized. The tip of the abdomen is truncated in the females, and oblique in the males.

O. LUTEUS. *L., Syst. Nat.*, 2,957, 55 (*Ichneumon.*). *Fabr., Systema Piezatorum*, p. 130.

Fulvous; thorax striated; antennæ fulvous; wings broad; stigma fulvous.

O. INUTILIS. *Smith, Trans. Ent. Soc.*, 1876, p. 478.

*Female.* Rufo-ferruginous; the basal portion of the antennæ, to the extent of about one-third of their length, ferruginous. The prothorax, the scutellum, and the tibiæ and tarsi paler than the rest of the thorax; the wings hyaline and iridescent, the nervures fuscous, more or less ferruginous at the base of the wing; the stigma pale rufo-ferruginous. Abdomen rufo-fuscous towards the apex.

Length,  $4\frac{1}{4}$  lines.

*O. PEREGRINUS.* *Smith, Trans. Ent. Soc., 1876, p. 478.*

*Female.* Rufo-ferruginous; a narrow line at the inner orbits of the eyes, and a broad one behind them, yellow; antennæ black, with the scape and two basal joints of the flagellum rufo-ferruginous. Thorax: the anterior margin of the prothorax, the tegulae, and a spot beneath the wings, another beneath the posterior wings, close to the intermediate coxæ, the sides of the metathorax, and the scutellum and post-scutellum, yellow; the wings hyaline and iridescent, the nervures fuscous; all the nervures more or less ferruginous at the base of the wings as well as the stigma; the claws of the tarsi black. Abdomen more or less fuscous at the apex beneath.

Length, 7 lines.

*O. FERRUGINEUS.* *Smith, Trans. Ent. Soc., 1878, p. 2.*

Ferruginous, smooth and shining. A narrow yellow line on the lower portion of the inner orbit of the eyes, and a broader one behind them, not extending to their summit. Thorax: the tubercles, and a large spot above both the intermediate and posterior coxæ, as well as the scutellum, bright yellow; the spots above the posterior coxæ are tuberculate; wings hyaline and iridescent, the nervures black, the stigma ferruginous. The apical segments of the abdomen slightly fusco-ferruginous.

Length, 6 lines.

Dunedin.

*O. INUTILIS.* *Smith, Trans. Ent. Soc., 1878, p. 2.*

*Female.* Ferruginous; the eyes and tips of the mandibles black. Thorax shining; the mesothorax finally punctured; the metathorax opaque and finely rugulose; wings hyaline and iridescent, the nervures and stigma ferruginous; the legs paler than the thorax, except the coxæ, with the claws and pulvillus black. Abdomen smooth and shining, darkest towards the apex.

Length, 4 lines.

Dunedin.

## Genus—PANISCUS.

*Gravenhorst.*

Antennæ setaceous, as long as the body, the first joint swollen. *Wings with a small areole, pentagonal or triangular*, and more or less oblique. Abdomen compressed, the first segment gradually increasing posteriorly. Ovipositor very short, but longer than in *Ophion*.

P. EPHIPPIATUS. *Smith, Trans. Ent. Soc.*, 1876, p. 478.

*Female.* Rufo-ferruginous; the space between the ocelli black; the apical third of the antennæ fuscous; tips of the mandibles black. Thorax: the mesothorax black; the metathorax transversely finely striated; wings hyaline and iridescent, the stigma, costa, and nervures dark fuscous; the claws of the tarsi black. Abdomen rufo-ferruginous to the extent of the two basal segments, from thence fusco-ferruginous, becoming gradually darker to the apex; the ovipositor black.

Length,  $6\frac{1}{2}$  lines.

P. EPHIPPIATUS. *Smith, Trans. Ent. Soc.*, 1878, p. 3.

*Female.* Ferruginous, with the eyes, mesothorax, and apex of the abdomen black. The apical portion of the antennæ fuscous; the tips of the mandibles black. Thorax: the sternum black; wings hyaline, the nervures and stigma fuscous; the scutellum prominent, oblong, narrowed towards the apex, and with the sides margined; the metathorax finely transversely striated. The abdomen beyond the first segment fusco-ferruginous, darkest at the apex.

Length, 6 lines.

Dunedin.

This appears to be the same species as the last.—F. W. II.

#### Sub-Family—TRYPHONINÆ.

Abdomen subsessile; ovipositor not exerted.

#### Genus—SCOLOBATES.

##### *Gravenhorst.*

Posterior tarsi thickened; face flat; abdomen subsessile; basal segments gradually narrowed; ovipositor not exerted; scutellum flat; areolet wanting; head transverse, and deeply excavated behind.

S. VARIPES. *Smith, Trans. Ent. Soc.*, 1878, p. 3.

*Female.* Head and thorax black; abdomen red in the middle. The inner orbits of the eyes with a narrow ferruginous line; the mandibles and palpi pale testaceous; the antennæ ferruginous. The wings fulvo-hyaline, the nervures and stigma ferruginous. The mesothorax smooth and shining; the margin of the prothorax laterally

white, as well as the tegulæ; the scutellum white; the legs ferruginous; the posterior tibiæ black at the base to about one-fourth of their length, then one-fourth white, another fourth black, the apical portion ferruginous. One-fourth of the length of the abdomen in the middle ferruginous; the posterior tarsi black.

Length,  $2\frac{1}{2}$  lines.

Dunedin.

*S. INTRUDENS.* *Smith, Trans. Ent. Soc.*, 1878, *p.* 3.

*Female.* Black, with pale anterior and intermediate legs. Mandibles and palpi pale yellow; the antennæ a little longer than the body. Thorax subopaque; the wings hyaline, the nervures and stigma black, the tegulæ with a white spot; the anterior and intermediate coxæ and all the trochanters, yellow; the anterior and intermediate femora and tibiæ pale ferruginous; the tarsi more or less fuscous; the posterior tibiæ pale beneath. Abdomen shining-black; the ovipositor nearly as long as the head and thorax.

Length, 3 lines.

## Genus—TRYPHON.

### *Fallen.*

Posterior tarsi slender; face flat; abdomen oblong, subsessile; ovipositor not exerted; scutellum flat; areolet subobsolete, triangular or suborbicular; antennæ slender or moderate; legs moderate.

*T. OBSTRUCTOR.* *Smith, Trans. Ent. Soc.*,<sup>1878</sup>, *p.* 4.

Head and thorax black; abdomen red and black. The mandibles and palpi pale testaceous, as are also the anterior and intermediate coxæ and trochanters; the legs otherwise red. The thorax opaque, and, with the metathorax, the sides, and beneath, covered with a fine sericeous pile; wings sub-hyaline, the nervures and stigma fuscous, the tegulæ with a white spot. The three basal segments of the abdomen black, with their apical margins ferruginous; the following segments with an oblong-quadrate black spot in the middle, extending to about two-thirds of the length of the segments.

Length,  $2\frac{3}{4}$  lines.

Dunedin.

A probable variety of this species has the posterior coxæ black.

## Sub-Family—PIMPILINÆ.

Abdomen sessile ; ovipositor long.

## Genus—RHYSSA.

Antennæ long and setaceous, but shorter than the body ; the first joint broadly notched on the side. Body long, compressed at the extremity in the females, cylindrical or filiform in the males ; the eighth and last segment of the abdomen in the males with a long narrow tongue partly covering the two valves. Mesothorax wrinkled transversely.

R. ANTIPODUM. *Smith, Trans. Ent. Soc., 1876, p. 479, pl. IV., f. 4.*

*Female.* Dark ferruginous, variegated with yellow. Head : the orbits of the eyes, slightly interrupted opposite the insertion of the antennæ, and the clypeus, yellow ; the palpi rufo-testaceous ; the apical third of the antennæ yellowish-white, the apex fuscous. Thorax : the mesothorax transversely rugo-striate ; the lateral margins of the prothorax, the tegulæ, and a spot beneath the wings, the scutellum, post-scutellum, and the apical half of the metathorax, yellow ; wings hyaline or faintly fulvous, the nervures black ; legs ferruginous ; the anterior and intermediate coxæ and trochanters, and the posterior trochanters, yellow. Abdomen smooth and shining ; at the apical margin of the first and second segments a yellow fascia, which emits a short yellow line in the middle ; each of the four following segments has a longitudinal oblong spot in the middle, and also an elongate one laterally ; the sixth has two yellow spots, and the two following segments have their posterior margins yellow, extending to the apical segment also, which has two additional yellow lines beneath the spot. Length, 15 lines.

*Male.* Resembles the female, except in the abdomen, which is dark brown, the first segment only having near the apical margin a yellow fascia, which is interrupted in the middle. Length, 15 lines.  
—F. W. H.

North Island ; Canterbury ; Southland.

## Genus—LISSONOTA.

*Gravenhorst.*

Thorax smooth ; abdomen shining, with smooth segments ; terminal ventral segments entire in the female ; scutellum triangular ; areolet obsolete or triangular ; ovipositor long ; antennæ as long, or longer than, the body, the first joint swollen and truncate.



*L. FLAVO-PICTA.* *Smith, Trans. Ent. Soc., 1878, p. 4.*

Ferruginous; the head and thorax spotted with yellow. Head, the orbits of the eyes, the clypeus, and the mandibles yellow, the latter black at their tips. The mesothorax with two narrow longitudinal lines which widen anteriorly into an angulated shape, the prothorax with two longitudinal stripes at the sides, an oblong broad stripe beneath the wings, and all the coxæ above, yellow; the scutellum, post-scutellum, a minute spot on each side of the metathorax above, another in the middle of its posterior margin, and a broad stripe on its sides, yellow; the metathorax transversely finely aciculate; wings hyaline, the stigma ferruginous. Abdomen smooth and shining.

Length, 4-5 lines.

Dunedin.

The male is smaller, usually  $3\frac{1}{2}$  lines long, is coloured like the female, but has the face entirely yellow.

*L. ALBO-PICTA.* *Smith, Trans. Ent. Soc., 1878, p. 4.*

*Male.* Ferruginous, with the head black. The head with the orbits of the eyes white; the mandibles white at their base. Thorax: a central longitudinal black line on the mesothorax, and a narrow interrupted white one on each side of it, which expands anteriorly into a sub-triangular shape; a large ovate spot beneath the wings, and two or three small ones before it, two being on the sides of the prothorax, an oblong spot at the side of the metathorax, and the scutellum, white; the metathorax finely wrinkled transversely; wings hyaline and brightly iridescent, the stigma and nervures black; the two apical joints of the tarsi black. Abdomen clavate, with the apical joints fuscous.

Length, 3-4 lines.

Dunedin.

The female is not known. The male resembles that of *L. flavo-picta*, but is certainly a distinct species.

#### FAMILY—PROCTOTRUPIDÆ.

##### *Latreille.*

Egg parasites; minute. Body rather long and slender; antennæ eight- to fifteen-jointed, the joints often hairy; wings covered with minute hairs, and with most of the nervures absent; maxillary palpi three- to six-jointed; labial palpi usually three-jointed. Abdomen with five to seven segments; tarsi usually five-jointed, rarely four-jointed.

## Genus—PROCTOTRUPES.

Antennæ long and feathered, twelve-jointed. Anterior wings with the beginning of a cubital cell, and two longitudinal veins on the posterior half. Abdomen spindle-shaped, and very acutely pointed, the terminal segments being tubular in their arrangement. Mandibles without teeth. Anterior tibiæ with a single spur. Valves of the ovipositor long, exerted.

*P. INTRUDENS.* *Smith, Trans. Ent. Soc., 1878, p. 5.*

*Female.* Black, with the legs ferruginous, the apical joints of the tarsi fuscous. The mesothorax smooth and shining, as is also the scutellum; the metathorax coarsely rugose, and having at its base, in the middle, a deep longitudinal channel, which extends to half its length; at the commencement of the channel, on each side, a deep fossulet; the coxæ more or less fuscous or black. Abdomen very smooth and shining; in some examples the apex rufo-piceous.

Length,  $2\frac{1}{2}$  lines.

*Variety.* The scape of the antennæ rufo-piceous. In some specimens a fine silky down is observable on the mesothorax.

Canterbury.

## Genus—DIAPRIA.

*Latreille.*

Head horizontal, longer than broad, with the ocelli on the front edge; antennæ long and filiform, with a projection on the under side; fourteen-jointed in the male, twelve in the female; wings without veins or stigma; abdomen long, oval, and pedicelled; mandibles forcepate; cells obliterated; a small callous spot in the place of the stigma.

*D. (?) COCCOPHAGA.* *Maskell, Trans. N.Z. Inst., 1879, p. 228, pl. IX., f. 2 to 5.*

Black to the naked eye, but under the microscope the vertex of the head is green, the eyes red, the thorax and abdomen brown with green streaks; the whole body diapered with spots. The posterior wings are furnished with two minute hooks. The antennæ are moniliform, with from twelve to fifteen joints; elbowed at the third joint, the last three being soldered together. The head is transverse, the eyes faceted, the mandibles forcepate. The tarsi are five-jointed; the anterior pair of legs have a sharp curved spur, with three joints at the end of the tibiæ.

Christchurch.

## SUB-ORDER—TEREBRANTIA.

Abdomen sessile, in the female armed with a saw or borer. Larvæ with six legs and a number of pro-legs. Feed on vegetable substances.

## FAMILY—URO CERIDÆ.

Abdomen of female furnished with a borer; labium entire; prothorax elongated; front tibiæ with a single spur.

## Genus—DERECYRTA.

*Smith.*

Head subglobose, vertex swollen or convex; eyes lateral, large, ovate; ocelli prominent, placed in a triangle between the eyes; antennæ setaceous, composed of twenty-three to twenty-six joints, the scape short, curved, slightly thickened towards the apex; the first joint of the flagellum half the length of the scape, the second as long as the scape, third and four following joints as long as the first, the remaining joints are each in succession shorter than the preceding. Thorax as wide as the head, oblong, the sides parallel; the prothorax narrowed anteriorly into a short neck; the mesothorax slightly elevated in front; the scutellum elevated; the metathorax with a deep incision in the middle; the anterior wings with one or two marginal and four submarginal cells, the marginal cell, or cells, elongated, with a short appendix at the apex; the first submarginal cell small, the second oblong, widest at the apex, the third subquadrate, the fourth extending to the apex of the wing; the second and third cells each receive a recurrent vein a little within their base; legs slender, not compressed; the four hind tibiæ bi-spinous at their apex; ungues with a strong broad tooth at the base. Abdomen cylindrical, about twice the length of the head and thorax; the ovipositor short, and slightly exerted.

D. DECEPTUS. *Smith, Trans. Ent. Soc., 1876, p. 474, pl. IV., f. 6.*

*Female.* Ferruginous; abdomen rufo-fulvous, variegated with yellowish-white. Head globose, shining, and with scattered punctures; a broad yellowish-white line round the orbits of the eyes, slightly interrupted at their vertex; two lines of the same colour run longitudinally over the vertex, and unite with another line that borders its posterior margin; the clypeus and mandibles yellowish, the latter obliquely truncate, and with four black teeth; the flagellum black, except its basal joint and the curved scape, both of which are ferru-

ginous. Thorax: the prothorax forming a short neck; a line on each side of its posterior margin running to the base of the wings; two oblique stripes on the mesothorax inclining inwardly, and uniting with a transverse waved stripe at its basal margin, two spots on the scutellum, and also the post-scutellum, yellowish-white; wings fulvo-hyaline, the nervus ferruginous, the stigma fuscous; a large yellowish spot beneath the wings, and the posterior coxæ pale beneath; the legs pale ferruginous. Abdomen yellowish towards the base.

Length, 5 lines.

### Genus—XIPHYDRIA.

*Latreille.*

Ovipositor short; body rather flattened and somewhat turned up behind; tip of the abdomen ending in an obtuse point. Antennæ short, curved, and tapering at the end. Prothorax elongated into a neck; two marginal and four submarginal cells; maxillary palpi long, five-jointed.

X. FLAVO-PICTA. *Smith, Trans. Ent. Soc., 1878, p. 1.*

*Male.* Ferruginous, the head and thorax variegated with yellow; the sixth, seventh, and eighth segments of the abdomen black. Antennæ black, with the two basal segments ferruginous. The head yellow; a broad ferruginous stripe from the posterior margin of the vertex to a little beyond the ocelli; an angulated ferruginous spot at the sides of the vertex, touching the eyes, and three small ones at the insertion of the neck. The posterior margin of the prothorax yellow; the mesothorax with two oblique stripes inclining inwardly and uniting at its posterior margin, a lunate spot on each side of the scutum, two ovate ones at the base of the metathorax, and three small ones at its apex, yellow; a large oblong spot beneath the wings, and the legs, yellow; wings pale fulvo-hyaline and splendidly iridescent; the tarsi pale ferruginous.

Length, 4 lines.

Dunedin.













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